

I. Perimeter Ditches/Off-Site Discharge		<input checked="" type="checkbox"/> Applicable	<input type="checkbox"/> N/A
Remarks: Drainage swales in good condition.			
1.	Siltation	<input type="checkbox"/> Location shown on site map	<input checked="" type="checkbox"/> Siltation not evident
Remarks <u>None</u>			
2.	Vegetative Growth	<input type="checkbox"/> Location shown on site map	<input checked="" type="checkbox"/> N/A
<input type="checkbox"/> Vegetation does not impede flow			
Remarks <u>None.</u>			
3.	Erosion	<input type="checkbox"/> Location shown on site map	<input checked="" type="checkbox"/> Erosion not evident
Remarks <u>None</u>			
4.	Discharge Structure	<input checked="" type="checkbox"/> Functioning	<input type="checkbox"/> N/A
Remarks <u>None</u>			
VIII. VERTICAL BARRIER WALLS		<input type="checkbox"/> Applicable	<input checked="" type="checkbox"/> N/A
IX. GROUNDWATER/SURFACE WATER REMEDIES		<input checked="" type="checkbox"/> Applicable	<input type="checkbox"/> N/A
A. Groundwater Extraction Wells, Pumps, and Pipelines		<input type="checkbox"/> Applicable	<input checked="" type="checkbox"/> N/A
B. Surface Water Collection Structures, Pumps, and Pipelines		<input type="checkbox"/> Applicable	<input checked="" type="checkbox"/> N/A
C. Treatment System		<input type="checkbox"/> Applicable	<input checked="" type="checkbox"/> N/A
D. Monitoring Data			
1.	Monitoring Data <input checked="" type="checkbox"/> Is routinely submitted on time <input checked="" type="checkbox"/> Is of acceptable quality		
2.	Monitoring data suggests: <input checked="" type="checkbox"/> Groundwater plume is effectively contained <input type="checkbox"/> Contaminant concentrations are declining Remarks <u>Groundwater plumes in some portions of the site have declined to below active treatment levels, others continue to exceed and are undergoing active treatment.</u>		
D. Monitored Natural Attenuation			
1.	Monitoring Wells (natural attenuation remedy) <input checked="" type="checkbox"/> Properly secured/locked <input checked="" type="checkbox"/> Functioning <input checked="" type="checkbox"/> Routinely sampled <input checked="" type="checkbox"/> Good condition <input type="checkbox"/> All required wells located <input type="checkbox"/> Needs Maintenance <input type="checkbox"/> N/A Remarks <u>Monitoring wells are inspected, sampled, and repaired under the Basewide groundwater monitoring program and plume-specific remediation actions.</u>		
X. OTHER REMEDIES			
If there are remedies applied at the site which are not covered above, attach an inspection sheet describing the physical nature and condition of any facility associated with the remedy. An example would be soil vapor extraction. Soil vapor extraction (SVE) System:			
3.SVE wells and conveyance piping <input type="checkbox"/> Functioning <input checked="" type="checkbox"/> Good condition <input type="checkbox"/> Needs Maintenance <input type="checkbox"/> N/A			
4.SVE treatment system components <input type="checkbox"/> Functioning <input checked="" type="checkbox"/> Good condition <input type="checkbox"/> Needs Maintenance <input type="checkbox"/> N/A			
Remarks <u>SVE systems are currently not operating until active treatment is complete and an evaluation of the remedy is completed. Piping is in good condition (Photographs 4 and 5).</u>			

XI. OVERALL OBSERVATIONS	
A. Implementation of the Remedy	Describe issues and observations relating to whether the remedy is effective and functioning as designed. Begin with a brief statement of what the remedy is to accomplish (i.e., to contain contaminant plume, minimize infiltration and gas emission, etc.). <u>Remedy for Parcel C consists of durable covers, active groundwater remediation and monitoring, and ICs to prevent exposure to chemicals of concern and radionuclides of concern in groundwater, soil, and structures. The remedy is functioning as intended, groundwater is being monitored, and the monitoring and treatment approach is conducted as defined in the remedial action work plan and remedial action monitoring plans. Durable covers are maintained through the O&M program and access restrictions appear effective in preventing unauthorized access to the site. Active trenching work is underway.</u>
B. Adequacy of O&M	Describe issues and observations related to the implementation and scope of O&M procedures. In particular, discuss their relationship to the current and long-term protectiveness of the remedy. <u>O&M is effective in identifying areas for repair and conducting routine repairs. O&M reports indicate some areas with more frequent and larger sinkholes that require repairs outside of routine O&M scope. These areas are monitored and access is restricted by permanent fencing.</u>
C. Early Indicators of Potential Remedy Problems	Describe issues and observations such as unexpected changes in the cost or scope of O&M or a high frequency of unscheduled repairs, that suggest that the protectiveness of the remedy may be compromised in the future. <u>Increased frequency of sinkholes that cause damage to the durable cover may be caused by aging infrastructure underlying Parcel C. Infrastructure repairs are not under the responsibility of environmental restoration. Exposure is controlled through fencing, signage, and other mechanisms to prevent access to the area.</u>
D. Opportunities for Optimization	Describe possible opportunities for optimization in monitoring tasks or the operation of the remedy. <u>No opportunities outside of optimization documented in the remedy evaluations routinely conducted for the groundwater remedy.</u>



Parcel C Photograph 1: Soil cover west of Building 134. Facing southeast.
Photographed by: Marcella Navas/CH2M, 2/9/2023



Parcel C Photograph 2: Soil cover west of Building 134. Facing northwest.
Photographed by: Marcella Navas/CH2M, 2/9/2023



Parcel C Photograph 3: Drainage swale southwest of Building 134. Facing southwest.
Photographed by: Marcella Navas/CH2M, 2/9/2023



Parcel C Photograph 4: SVE treatment systems surrounded by chain-link fence. Facing west.
Photographed by: Marcella Navas/CH2M, 2/9/2023



Parcel C Photograph 5: SVE treatment systems surrounded by chain-link fence. Facing northwest.

Photographed by: Marcella Navas/CH2M, 2/9/2023



Parcel C Photograph 6: Asphalt pavement cover southeast of Building 134. Facing north.

Photographed by: Marcella Navas/CH2M, 2/9/2023



Parcel C Photograph 7: Asphalt pavement cover southwest of Building 214 along Lockwood Avenue. Facing northwest.

Photographed by: Marcella Navas/CH2M, 2/9/2023



Parcel C Photograph 8: Asphalt pavement cover alongside Parcel G and Parcel U2. Barrier to prevent access. Facing south.

Photographed by: Marcella Navas/CH2M, 2/9/2023



Parcel C Photograph 9: Stormwater best management practices around catch basins during active trenching work. Facing northwest.

Photographed by: Marcella Navas/CH2M, 2/9/2023



Parcel C Photograph 10: Paved drainage swale outfall south of Building 230. Facing southwest.

Photographed by: Marcella Navas/CH2M, 2/9/2023



Parcel C Photograph 11: Storage of stockpiles with stormwater management best management practices surrounding and intact. Facing northeast.

Photographed by: Marcella Navas/CH2M, 2/9/2023



Parcel C Photograph 12: Stormwater best management practice around catch basin west of Building 231. Facing southeast.

Photographed by: Marcella Navas/CH2M, 2/9/2023



Parcel C Photograph 13: Asphalt paved drainage swale along Spear Avenue between Building 281 and 251. Facing southwest.

Photographed by: Marcella Navas/CH2M, 2/9/2023



Parcel C Photograph 14: Paved drainage swale southeast of Building 235. Outfall south of Building 234. Facing northwest.

Photographed by: Marcella Navas/CH2M, 2/9/2023



Parcel C Photograph 15: Paved drainage swale southwest of Building 230. Facing northwest.

Photographed by: Marcella Navas/CH2M, 2/9/2023



Parcel C Photograph 16: Asphalt pavement cover southeast of Building 228 along Nimitz Avenue. Facing southwest.

Photographed by: Marcella Navas/CH2M, 2/9/2023



Parcel C Photograph 17: Chain-link fence in between parcel UC-2 along Fischer Avenue. Facing west.

Photographed by: Marcella Navas/CH2M, 2/9/2023



Parcel C Photograph 18: Monitoring well south of Building 271 along Nimitz Avenue. Facing northwest.

Photographed by: Marcella Navas/CH2M, 2/9/2023



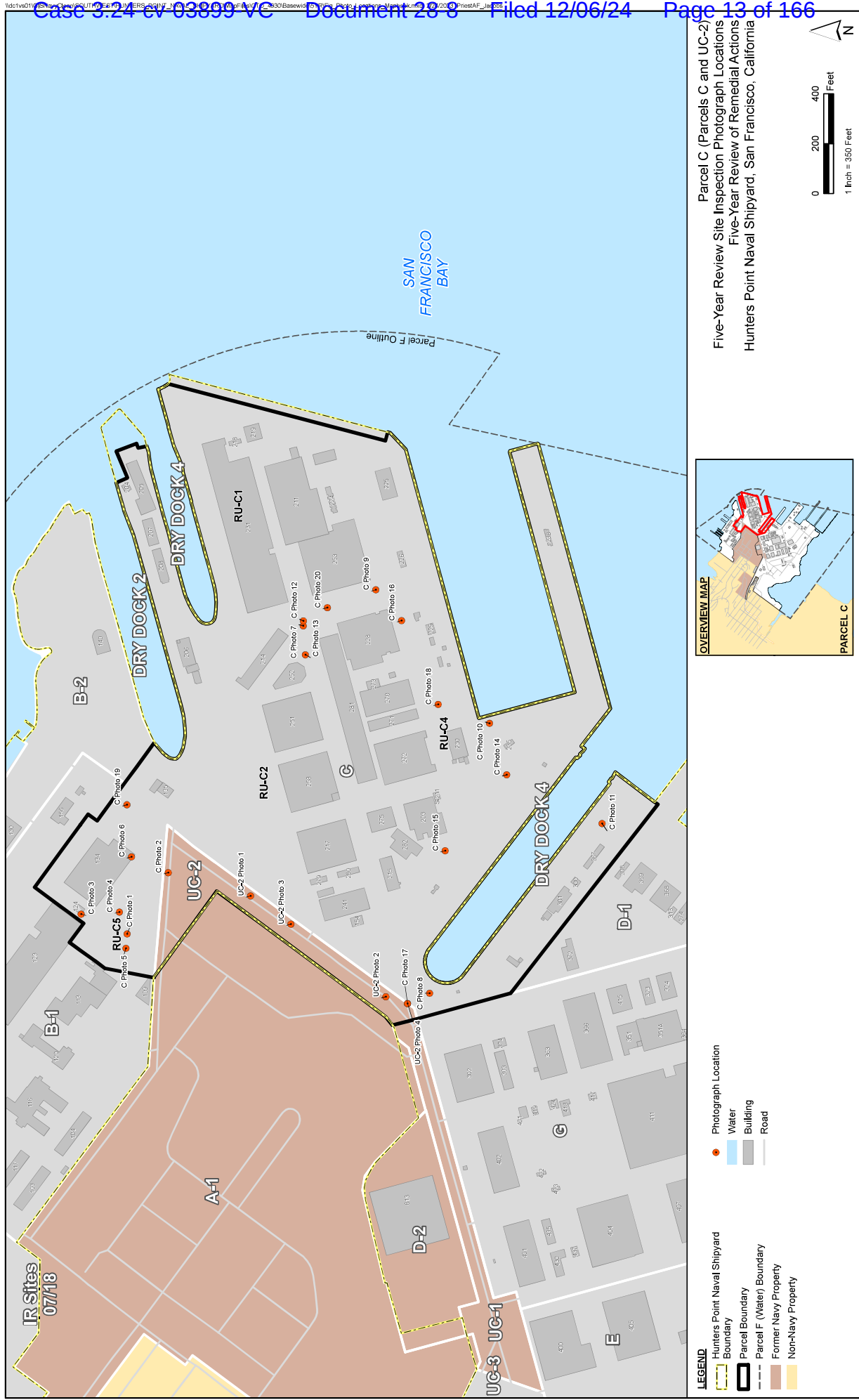
Parcel C Photograph 19: Signs signaling caution near trenching between of Building 134 and 135 outside of gated area of Parcel B-1. Facing southeast.

Photographed by: Marcella Navas/CH2M, 2/9/2023



Parcel C Photograph 20: Planned excavation area west of Building 253. Facing east.

Photographed by: Marcella Navas/CH2M, 2/9/2023



Parcel C (Parcels C and UC-2)
Five-Year Review Site Inspection Photograph Locations
Five-Year Review of Remedial Actions
Hunters Point Naval Shipyard, San Francisco, California

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Five-Year Review Site Inspection Checklist

I. SITE INFORMATION																			
Site name: Parcel D-1		Date of inspection: 2/9/23																	
Location and Region: Hunters Point Naval Shipyard San Francisco, CA, Region 9		EPA ID: CA1170090087																	
Agency, office, or company leading the five-year review: Department of the Navy		Weather/temperature: Sunny 50s																	
Remedy Includes: (Check all that apply) <table border="0"> <tr> <td><input type="checkbox"/> Landfill cover/containment</td> <td><input checked="" type="checkbox"/> Monitored natural attenuation</td> </tr> <tr> <td><input type="checkbox"/> Access controls</td> <td><input type="checkbox"/> Groundwater containment</td> </tr> <tr> <td><input checked="" type="checkbox"/> Institutional controls</td> <td><input type="checkbox"/> Vertical barrier walls</td> </tr> <tr> <td><input type="checkbox"/> Groundwater pump and treatment</td> <td></td> </tr> <tr> <td><input type="checkbox"/> Surface water collection and treatment</td> <td></td> </tr> <tr> <td colspan="2"><input checked="" type="checkbox"/> Other <u>Durable cover consisting of a soil cover, shoreline revetment (riprap), asphaltic concrete pavement</u></td> </tr> </table>				<input type="checkbox"/> Landfill cover/containment	<input checked="" type="checkbox"/> Monitored natural attenuation	<input type="checkbox"/> Access controls	<input type="checkbox"/> Groundwater containment	<input checked="" type="checkbox"/> Institutional controls	<input type="checkbox"/> Vertical barrier walls	<input type="checkbox"/> Groundwater pump and treatment		<input type="checkbox"/> Surface water collection and treatment		<input checked="" type="checkbox"/> Other <u>Durable cover consisting of a soil cover, shoreline revetment (riprap), asphaltic concrete pavement</u>					
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Attachments: <input type="checkbox"/> Inspection team roster attached <input checked="" type="checkbox"/> Site map attached																			
II. INTERVIEWS (Interviews Conducted Separately)																			
III. ON-SITE DOCUMENTS & RECORDS VERIFIED (Check all that apply)																			
1.	O&M Documents <table border="0"> <tr> <td><input checked="" type="checkbox"/> O&M manual</td> <td><input checked="" type="checkbox"/> Readily available</td> <td><input type="checkbox"/> Up to date</td> <td><input type="checkbox"/> Not applicable (N/A)</td> </tr> <tr> <td><input checked="" type="checkbox"/> As-built drawings</td> <td><input checked="" type="checkbox"/> Readily available</td> <td><input type="checkbox"/> Up to date</td> <td><input type="checkbox"/> N/A</td> </tr> <tr> <td><input type="checkbox"/> Maintenance logs</td> <td><input type="checkbox"/> Readily available</td> <td><input type="checkbox"/> Up to date</td> <td><input checked="" type="checkbox"/> N/A</td> </tr> </table> Remarks <u>Documents available in the Administrative Record and O&M contractors' offices.</u>			<input checked="" type="checkbox"/> O&M manual	<input checked="" type="checkbox"/> Readily available	<input type="checkbox"/> Up to date	<input type="checkbox"/> Not applicable (N/A)	<input checked="" type="checkbox"/> As-built drawings	<input checked="" type="checkbox"/> Readily available	<input type="checkbox"/> Up to date	<input type="checkbox"/> N/A	<input type="checkbox"/> Maintenance logs	<input type="checkbox"/> Readily available	<input type="checkbox"/> Up to date	<input checked="" type="checkbox"/> N/A				
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2.	Site-Specific Health and Safety Plan <table border="0"> <tr> <td><input checked="" type="checkbox"/> Readily available</td> <td><input type="checkbox"/> Up to date</td> <td><input type="checkbox"/> N/A</td> </tr> <tr> <td><input type="checkbox"/> Contingency plan/emergency response plan</td> <td><input type="checkbox"/> Readily available</td> <td><input type="checkbox"/> Up to date <input checked="" type="checkbox"/> N/A</td> </tr> </table> Remarks <u>Available in O&M contractors' offices.</u>			<input checked="" type="checkbox"/> Readily available	<input type="checkbox"/> Up to date	<input type="checkbox"/> N/A	<input type="checkbox"/> Contingency plan/emergency response plan	<input type="checkbox"/> Readily available	<input type="checkbox"/> Up to date <input checked="" type="checkbox"/> N/A										
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3.	O&M and OSHA Training Records <input checked="" type="checkbox"/> Readily available <input type="checkbox"/> Up to date <input type="checkbox"/> N/A Remarks <u>Available in O&M contractors' offices.</u>																		
4.	Permits and Service Agreements <table border="0"> <tr> <td><input type="checkbox"/> Air discharge permit</td> <td><input type="checkbox"/> Readily available</td> <td><input type="checkbox"/> Up to date</td> <td><input checked="" type="checkbox"/> N/A</td> </tr> <tr> <td><input type="checkbox"/> Effluent discharge</td> <td><input type="checkbox"/> Readily available</td> <td><input type="checkbox"/> Up to date</td> <td><input checked="" type="checkbox"/> N/A</td> </tr> <tr> <td><input type="checkbox"/> Waste disposal, POTW</td> <td><input type="checkbox"/> Readily available</td> <td><input type="checkbox"/> Up to date</td> <td><input checked="" type="checkbox"/> N/A</td> </tr> <tr> <td><input type="checkbox"/> Other permits _____</td> <td><input type="checkbox"/> Readily available</td> <td><input type="checkbox"/> Up to date</td> <td><input checked="" type="checkbox"/> N/A</td> </tr> </table> Remarks _____			<input type="checkbox"/> Air discharge permit	<input type="checkbox"/> Readily available	<input type="checkbox"/> Up to date	<input checked="" type="checkbox"/> N/A	<input type="checkbox"/> Effluent discharge	<input type="checkbox"/> Readily available	<input type="checkbox"/> Up to date	<input checked="" type="checkbox"/> N/A	<input type="checkbox"/> Waste disposal, POTW	<input type="checkbox"/> Readily available	<input type="checkbox"/> Up to date	<input checked="" type="checkbox"/> N/A	<input type="checkbox"/> Other permits _____	<input type="checkbox"/> Readily available	<input type="checkbox"/> Up to date	<input checked="" type="checkbox"/> N/A
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<input type="checkbox"/> Other permits _____	<input type="checkbox"/> Readily available	<input type="checkbox"/> Up to date	<input checked="" type="checkbox"/> N/A																
5.	Gas Generation Records <input type="checkbox"/> Readily available <input type="checkbox"/> Up to date <input checked="" type="checkbox"/> N/A Remarks _____																		

6.	Settlement Monument Records	<input checked="" type="checkbox"/> Readily available	<input type="checkbox"/> Up to date	<input type="checkbox"/> N/A
	Remarks <u>Records in O&M reports.</u>			
7.	Groundwater Monitoring Records	<input checked="" type="checkbox"/> Readily available	<input type="checkbox"/> Up to date	<input type="checkbox"/> N/A
	Remarks: <u>Groundwater monitoring is reported in annual Basewide groundwater monitoring reports.</u>			
8.	Leachate Extraction Records	<input type="checkbox"/> Readily available	<input type="checkbox"/> Up to date	<input checked="" type="checkbox"/> N/A
	Remarks			
9.	Discharge Compliance Records			
	<input type="checkbox"/> Air	<input type="checkbox"/> Readily available	<input type="checkbox"/> Up to date	<input checked="" type="checkbox"/> N/A
	<input type="checkbox"/> Water (effluent)	<input type="checkbox"/> Readily available	<input type="checkbox"/> Up to date	<input checked="" type="checkbox"/> N/A
	Remarks			
10.	Daily Access/Security Logs	<input type="checkbox"/> Readily available	<input type="checkbox"/> Up to date	<input checked="" type="checkbox"/> N/A
	Remarks: <u>Guarded security gates at Robinson Street and Crisp Road restrict access to Hunters Point Naval Shipyard. City of San Francisco provides security and maintains access logs.</u>			
IV. O&M COSTS (Not Applicable for Site Inspection)				
V. ACCESS AND INSTITUTIONAL CONTROLS <input checked="" type="checkbox"/> Applicable <input type="checkbox"/> N/A				
A. Fencing				
1.	Fencing damaged	<input type="checkbox"/> Location shown on site map	<input checked="" type="checkbox"/> Gates secured	<input type="checkbox"/> N/A
	Remarks <u>No damage observed.</u>			
B. Other Access Restrictions				
1.	Signs and other security measures	<input type="checkbox"/> Location shown on site map	<input type="checkbox"/> N/A	
	Remarks <u>Signs legible, access is controlled in active trenching areas. Buildings locked and secure.</u>			
C. Institutional Controls (ICs)				
1.	Implementation and enforcement			
	Site conditions imply ICs not properly implemented	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No	<input type="checkbox"/> N/A
	Site conditions imply ICs not being fully enforced	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No	<input type="checkbox"/> N/A
	Type of monitoring (e.g., self-reporting, drive by) <u>Routine Inspection</u>			
	Frequency <u>Annually</u>			
	Responsible party/agency <u>Navy and Navy O&M Contractors (Aptim Federal Services)</u>			
	Reporting is up-to-date	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> N/A
	Reports are verified by the lead agency	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> N/A
	Specific requirements in deed or decision documents have been met	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> N/A
	Violations have been reported	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input checked="" type="checkbox"/> N/A
	Other problems or suggestions: <input type="checkbox"/> Report attached			
	<u>None; no incompatible land uses or unauthorized intrusive activities observed.</u>			
2.	Adequacy	<input checked="" type="checkbox"/> ICs are adequate	<input type="checkbox"/> ICs are inadequate	<input type="checkbox"/> N/A
	Remarks <u>None</u>			

D. General			
1.	Vandalism/trespassing Remarks <u>None</u>	<input type="checkbox"/> Location shown on site map	<input checked="" type="checkbox"/> No vandalism evident
2.	Land use changes on site Remarks <u>None</u>	<input checked="" type="checkbox"/> N/A	
3.	Land use changes off site Remarks <u>None</u>	<input checked="" type="checkbox"/> N/A	
VI. GENERAL SITE CONDITIONS			
A. Roads <input checked="" type="checkbox"/> Applicable <input type="checkbox"/> N/A			
1.	Roads damaged Remarks <u>None</u>	<input type="checkbox"/> Location shown on site map	<input checked="" type="checkbox"/> Roads adequate <input type="checkbox"/> N/A
B. Other Site Conditions			
Remarks <u>Active work is being conducted related to radiological rescanning efforts. Many areas of the site are inaccessible while work is ongoing but stormwater best management practices (BMPs) are in use. Old soil stockpiles were observed, secondary containment or other BMPs and signage is present (Photographs 11, 15, and 20).</u>			
VII. COVERS <input checked="" type="checkbox"/> Applicable <input type="checkbox"/> N/A			
Note that the durable covers onsite are not engineered landfill covers.			
A. Surface			
1.	Settlement (Low spots) Remarks <u>None</u>	<input type="checkbox"/> Location shown on site map	<input checked="" type="checkbox"/> Settlement not evident
2.	Cracks Remarks <u>Minor cracks along drainage swale and flat asphalt cover where vegetation is growing (Photographs 7, 8, and 9).</u>	<input type="checkbox"/> Location shown on site map	<input type="checkbox"/> Cracking not evident
3.	Erosion Remarks <u>None</u>	<input type="checkbox"/> Location shown on site map	<input checked="" type="checkbox"/> Erosion not evident
4.	Holes Remarks <u>Small hole from vegetation growth observed (Photograph 7).</u>	<input checked="" type="checkbox"/> Location shown on site map	<input type="checkbox"/> Holes not evident
5.	Vegetative Cover <input type="checkbox"/> Grass <input type="checkbox"/> Cover properly established <input type="checkbox"/> No signs of stress <input type="checkbox"/> Trees/Shrubs (indicate size and locations on a diagram) Remarks <u>Not applicable.</u>		
6.	Alternative Cover (Shoreline Revetment) Remarks <u>Generally good condition, smaller rocks (3- to 4-inch diameter) appear to have been washed onto the durable cover from the shore (Photographs 17 and 18).</u>	<input type="checkbox"/> N/A	
7.	Bulges Remarks <u>None</u>	<input type="checkbox"/> Location shown on site map	<input checked="" type="checkbox"/> Bulges not evident

8.	Wet Areas/Water Damage	<input checked="" type="checkbox"/> Wet areas/water damage not evident
	<input type="checkbox"/> Wet areas	<input type="checkbox"/> Location shown on site map Areal extent _____
	<input type="checkbox"/> Ponding	<input type="checkbox"/> Location shown on site map Areal extent _____
	<input type="checkbox"/> Seeps	<input type="checkbox"/> Location shown on site map Areal extent _____
	<input type="checkbox"/> Soft subgrade	<input type="checkbox"/> Location shown on site map Areal extent _____
	Remarks <u>None</u>	
9.	Slope Instability	
	<input type="checkbox"/> Slides	<input type="checkbox"/> Location shown on site map <input checked="" type="checkbox"/> No evidence of slope instability
	Remarks <u>Not applicable.</u>	
	B. Benches	<input type="checkbox"/> Applicable <input checked="" type="checkbox"/> N/A
	(Horizontally constructed mounds of earth placed across a steep landfill side slope to interrupt the slope in order to slow down the velocity of surface runoff and intercept and convey the runoff to a lined channel.)	
	C. Letdown Channels	<input type="checkbox"/> Applicable <input checked="" type="checkbox"/> N/A
	(Channel lined with erosion control mats, riprap, grout bags, or gabions that descend down the steep side slope of the cover and will allow the runoff water collected by the benches to move off of the landfill cover without creating erosion gullies.)	
	D. Cover Penetrations	<input checked="" type="checkbox"/> Applicable <input type="checkbox"/> N/A
1.	Gas Vents	<input type="checkbox"/> Active <input type="checkbox"/> Passive
	<input type="checkbox"/> Properly secured/locked	<input type="checkbox"/> Functioning <input type="checkbox"/> Routinely sampled <input type="checkbox"/> Good condition
	<input type="checkbox"/> Evidence of leakage at penetration	<input type="checkbox"/> Needs Maintenance <input checked="" type="checkbox"/> N/A
	Remarks	
2.	Gas Monitoring Probes	
	<input type="checkbox"/> Properly secured/locked	<input type="checkbox"/> Functioning <input type="checkbox"/> Routinely sampled <input type="checkbox"/> Good condition
	<input type="checkbox"/> Evidence of leakage at penetration	<input type="checkbox"/> Needs Maintenance <input checked="" type="checkbox"/> N/A
	Remarks	
3.	Monitoring Wells (within surface area of landfill)	
	<input type="checkbox"/> Properly secured/locked	<input type="checkbox"/> Functioning <input type="checkbox"/> Routinely sampled <input type="checkbox"/> Good condition
	<input type="checkbox"/> Evidence of leakage at penetration	<input type="checkbox"/> Needs Maintenance <input type="checkbox"/> N/A
	Remarks <u>See Groundwater (Section IX)</u>	
4.	Leachate Extraction Wells	
	<input type="checkbox"/> Properly secured/locked	<input type="checkbox"/> Functioning <input type="checkbox"/> Routinely sampled <input type="checkbox"/> Good condition
	<input type="checkbox"/> Evidence of leakage at penetration	<input type="checkbox"/> Needs Maintenance <input checked="" type="checkbox"/> N/A
	Remarks	
5.	Settlement Monuments	<input type="checkbox"/> Located <input checked="" type="checkbox"/> Routinely surveyed <input type="checkbox"/> N/A
	Remarks <u>Settlement monuments in Parcel D are not scheduled for surveying in the next 3 years.</u>	
	E. Gas Collection and Treatment	<input type="checkbox"/> Applicable <input checked="" type="checkbox"/> N/A
	F. Cover Drainage Layer	<input type="checkbox"/> Applicable <input checked="" type="checkbox"/> N/A
	G. Detention/Sedimentation Ponds	<input type="checkbox"/> Applicable <input checked="" type="checkbox"/> N/A
	H. Retaining Walls	<input type="checkbox"/> Applicable <input checked="" type="checkbox"/> N/A

I. Perimeter Ditches/Off-Site Discharge		<input checked="" type="checkbox"/> Applicable	<input type="checkbox"/> N/A
Remarks: <u>Asphalt-lined drainage channels/swales are in good condition (Photographs 4, 5, 6, and 8).</u>			
1.	Siltation	<input type="checkbox"/> Location shown on site map	<input checked="" type="checkbox"/> Siltation not evident
Remarks <u>None</u>			
2.	Vegetative Growth	<input checked="" type="checkbox"/> Location shown on site map	<input type="checkbox"/> N/A
<input checked="" type="checkbox"/> Vegetation does not impede flow Remarks <u>Minor vegetation growth (Photographs 8 and 9).</u>			
3.	Erosion	<input type="checkbox"/> Location shown on site map	<input checked="" type="checkbox"/> Erosion not evident
Remarks <u>None</u>			
4.	Discharge Structure	<input checked="" type="checkbox"/> Functioning	<input type="checkbox"/> N/A
Remarks <u>Structure in good condition (Photograph 8).</u>			
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X. OTHER REMEDIES – None			
XI. OVERALL OBSERVATIONS			
A. Implementation of the Remedy			

	<p>Describe issues and observations relating to whether the remedy is effective and functioning as designed. Begin with a brief statement of what the remedy is to accomplish (i.e., to contain contaminant plume, minimize infiltration and gas emission, etc.).</p> <p><u>Remedy for Parcel D-1 consists of durable covers, groundwater monitoring, and ICs to prevent exposure to COCs and radionuclides of concern (ROCs) in groundwater, soil, and structures. The remedy is functioning as intended, groundwater COCs are below trigger levels. Durable covers are maintained through the O&M program and access restrictions appear effective in preventing unauthorized access to the site. Active trenching work is underway.</u></p>
B.	Adequacy of O&M
	<p>Describe issues and observations related to the implementation and scope of O&M procedures. In particular, discuss their relationship to the current and long-term protectiveness of the remedy.</p> <p><u>A review of O&M reports from 2019-2022 observed degradation in areas of previous repair along Gun Mole Pier that would require repairs outside of the O&M scope. These areas are currently being monitored and access has been restricted.</u></p>
C.	Early Indicators of Potential Remedy Problems
	<p>Describe issues and observations such as unexpected changes in the cost or scope of O&M or a high frequency of unscheduled repairs, that suggest that the protectiveness of the remedy may be compromised in the future.</p> <p><u>Increased frequency of sinkholes that cause damage to the durable cover may be caused by aging infrastructure underlying Parcel D-1. Infrastructure repairs are not under the responsibility of environmental restoration. Exposure is controlled through fencing, signage, and other mechanisms to prevent access to the area.</u></p>
D.	Opportunities for Optimization
	<p>Describe possible opportunities for optimization in monitoring tasks or the operation of the remedy.</p> <p><u>No opportunities for optimization have been identified.</u></p>



Parcel D-1 Photograph 1: Asphalt pavement cover adjacent to Parcel G. Facing northeast.

Photographed by: Marcella Navas/CH2M, 2/9/2023



Parcel D-1 Photograph 2: Asphalt pavement cover adjacent to Buildings 306 and 274. Facing northwest.

Photographed by: Marcella Navas/CH2M, 2/9/2023



Parcel D-1 Photograph 3: Asphalt pavement cover adjacent to Buildings 306 and 274. Facing northeast.

Photographed by: Marcella Navas/CH2M, 2/9/2023



Parcel D-1 Photograph 4: Drainage swale adjacent to Parcel G. Facing southwest.

Photographed by: Marcella Navas/CH2M, 2/9/2023



Parcel D-1 Photograph 5: Drainage swale adjacent to Parcel G. Facing southwest.
Photographed by: Marcella Navas/CH2M, 2/9/2023



Parcel D-1 Photograph 6: Drainage swale adjacent to Parcel G. Facing northwest.
Photographed by: Marcella Navas/CH2M, 2/9/2023



Parcel D1 Photograph 7: Hole and vegetation adjacent to asphalt drainage swale. Facing northwest.

Photographed by: Marcella Navas/CH2M, 2/9/2023



Parcel D-1 Photograph 8: Drainage swale adjacent to Parcel G. Minor vegetation growth in cracks along the seam between swale material and flat surface material. Facing northwest.

Photographed by: Marcella Navas/CH2M, 2/9/2023



Parcel D-1 Photograph 9: Drainage swale with water southeast to Building 307. Facing northeast.

Photographed by: Marcella Navas/CH2M, 2/9/2023



Parcel D-1 Photograph 10: Building 381, vegetation growth in the seam between exterior cover and building foundation. Facing northeast.

Photographed by: Marcella Navas/CH2M, 2/9/2023



Parcel D-1 Photograph 11: Stormwater management best management practices southwest of Building 307. Facing southwest.

Photographed by: Marcella Navas/CH2M, 2/9/2023



Parcel D-1 Photograph 12: Asphalt pavement cover between Buildings 381 and 383. Facing northeast.

Photographed by: Marcella Navas/CH2M, 2/9/2023



Parcel D-1 Photograph 13: Asphalt pavement cover adjacent to Building 530. Facing southwest.

Photographed by: Marcella Navas/CH2M, 2/9/2023



Parcel D-1 Photograph 14: Asphalt pavement cover adjacent to Building 530. Facing southwest.

Photographed by: Marcella Navas/CH2M, 2/9/2023



Parcel D-1 Photograph 15: Stockpile east of Building 525 within secondary containment and signage. Facing northeast.

Photographed by: Marcella Navas/CH2M, 2/9/2023



Parcel D-1 Photograph 16: Building 526 foundation. Facing southeast.

Photographed by: Marcella Navas/CH2M, 2/9/2023



Parcel D-1 Photograph 17: Shoreline revetment east of Building 381. Facing southeast.
Photographed by: Marcella Navas/CH2M, 2/9/2023



Parcel D-1 Photograph 18: Shoreline revetment east of Building 381. Facing northeast.
Photographed by: Marcella Navas/CH2M, 2/9/2023



Parcel D-1 Photograph 19: Monitoring well completion and repaired boreholes east of Building 523. Facing southwest.

Photographed by: Marcella Navas/CH2M, 2/9/2023



Parcel D-1 Photograph 20: Stockpiles from ongoing work with best management practices surrounding. Facing northeast.

Photographed by: Marcella Navas/CH2M, 2/9/2023

Five-Year Review Site Inspection Checklist

I. SITE INFORMATION																			
Site name: Parcel G		Date of inspection: 2/9/23																	
Location and Region: Hunters Point Naval Shipyard San Francisco, CA, Region 9		EPA ID: CA1170090087																	
Agency, office, or company leading the five-year review: Department of the Navy		Weather/temperature: Sunny, 50s																	
Remedy Includes: (Check all that apply) <table border="0"> <tr> <td><input type="checkbox"/> Landfill cover/containment</td> <td><input checked="" type="checkbox"/> Monitored natural attenuation</td> </tr> <tr> <td><input type="checkbox"/> Access controls</td> <td><input type="checkbox"/> Groundwater containment</td> </tr> <tr> <td><input checked="" type="checkbox"/> Institutional controls</td> <td><input type="checkbox"/> Vertical barrier walls</td> </tr> <tr> <td><input type="checkbox"/> Groundwater pump and treatment</td> <td></td> </tr> <tr> <td><input type="checkbox"/> Surface water collection and treatment</td> <td></td> </tr> <tr> <td colspan="2"><input checked="" type="checkbox"/> Other <u>Durable cover consisting of a soil cover, asphaltic concrete pavement</u></td> </tr> </table>				<input type="checkbox"/> Landfill cover/containment	<input checked="" type="checkbox"/> Monitored natural attenuation	<input type="checkbox"/> Access controls	<input type="checkbox"/> Groundwater containment	<input checked="" type="checkbox"/> Institutional controls	<input type="checkbox"/> Vertical barrier walls	<input type="checkbox"/> Groundwater pump and treatment		<input type="checkbox"/> Surface water collection and treatment		<input checked="" type="checkbox"/> Other <u>Durable cover consisting of a soil cover, asphaltic concrete pavement</u>					
<input type="checkbox"/> Landfill cover/containment	<input checked="" type="checkbox"/> Monitored natural attenuation																		
<input type="checkbox"/> Access controls	<input type="checkbox"/> Groundwater containment																		
<input checked="" type="checkbox"/> Institutional controls	<input type="checkbox"/> Vertical barrier walls																		
<input type="checkbox"/> Groundwater pump and treatment																			
<input type="checkbox"/> Surface water collection and treatment																			
<input checked="" type="checkbox"/> Other <u>Durable cover consisting of a soil cover, asphaltic concrete pavement</u>																			
Attachments: <input type="checkbox"/> Inspection team roster attached <input checked="" type="checkbox"/> Site map attached																			
II. INTERVIEWS (Interviews Conducted Separately)																			
III. ON-SITE DOCUMENTS & RECORDS VERIFIED (Check all that apply)																			
1.	O&M Documents <input checked="" type="checkbox"/> O&M manual <input checked="" type="checkbox"/> Readily available <input type="checkbox"/> Up to date <input type="checkbox"/> Not applicable (N/A) <input checked="" type="checkbox"/> As-built drawings <input checked="" type="checkbox"/> Readily available <input type="checkbox"/> Up to date <input type="checkbox"/> N/A <input type="checkbox"/> Maintenance logs <input type="checkbox"/> Readily available <input type="checkbox"/> Up to date <input checked="" type="checkbox"/> N/A Remarks <u>Documents available in the Administrative Record and O&M contractors' offices.</u>																		
2.	Site-Specific Health and Safety Plan <input checked="" type="checkbox"/> Readily available <input type="checkbox"/> Up to date <input type="checkbox"/> N/A <input type="checkbox"/> Contingency plan/emergency response plan <input type="checkbox"/> Readily available <input type="checkbox"/> Up to date <input checked="" type="checkbox"/> N/A Remarks <u>Documents available in O&M contractors' offices.</u>																		
3.	O&M and OSHA Training Records <input checked="" type="checkbox"/> Readily available <input type="checkbox"/> Up to date <input type="checkbox"/> N/A Remarks <u>Documents available in O&M contractors' offices.</u>																		
4.	Permits and Service Agreements <table border="0"> <tr> <td><input type="checkbox"/> Air discharge permit</td> <td><input type="checkbox"/> Readily available</td> <td><input type="checkbox"/> Up to date</td> <td><input checked="" type="checkbox"/> N/A</td> </tr> <tr> <td><input type="checkbox"/> Effluent discharge</td> <td><input type="checkbox"/> Readily available</td> <td><input type="checkbox"/> Up to date</td> <td><input checked="" type="checkbox"/> N/A</td> </tr> <tr> <td><input type="checkbox"/> Waste disposal, POTW</td> <td><input type="checkbox"/> Readily available</td> <td><input type="checkbox"/> Up to date</td> <td><input checked="" type="checkbox"/> N/A</td> </tr> <tr> <td><input type="checkbox"/> Other permits _____</td> <td><input type="checkbox"/> Readily available</td> <td><input type="checkbox"/> Up to date</td> <td><input checked="" type="checkbox"/> N/A</td> </tr> </table> Remarks			<input type="checkbox"/> Air discharge permit	<input type="checkbox"/> Readily available	<input type="checkbox"/> Up to date	<input checked="" type="checkbox"/> N/A	<input type="checkbox"/> Effluent discharge	<input type="checkbox"/> Readily available	<input type="checkbox"/> Up to date	<input checked="" type="checkbox"/> N/A	<input type="checkbox"/> Waste disposal, POTW	<input type="checkbox"/> Readily available	<input type="checkbox"/> Up to date	<input checked="" type="checkbox"/> N/A	<input type="checkbox"/> Other permits _____	<input type="checkbox"/> Readily available	<input type="checkbox"/> Up to date	<input checked="" type="checkbox"/> N/A
<input type="checkbox"/> Air discharge permit	<input type="checkbox"/> Readily available	<input type="checkbox"/> Up to date	<input checked="" type="checkbox"/> N/A																
<input type="checkbox"/> Effluent discharge	<input type="checkbox"/> Readily available	<input type="checkbox"/> Up to date	<input checked="" type="checkbox"/> N/A																
<input type="checkbox"/> Waste disposal, POTW	<input type="checkbox"/> Readily available	<input type="checkbox"/> Up to date	<input checked="" type="checkbox"/> N/A																
<input type="checkbox"/> Other permits _____	<input type="checkbox"/> Readily available	<input type="checkbox"/> Up to date	<input checked="" type="checkbox"/> N/A																
5.	Gas Generation Records <input type="checkbox"/> Readily available <input type="checkbox"/> Up to date <input checked="" type="checkbox"/> N/A Remarks																		
6.	Settlement Monument Records <input checked="" type="checkbox"/> Readily available <input type="checkbox"/> Up to date <input type="checkbox"/> N/A Remarks <u>Settlement monuments surveyed as part of O&M.</u>																		

7.	Groundwater Monitoring Records	<input checked="" type="checkbox"/> Readily available	<input type="checkbox"/> Up to date	<input type="checkbox"/> N/A
Remarks: <u>Groundwater monitoring is reported in annual Basewide groundwater monitoring reports.</u>				
8.	Leachate Extraction Records	<input type="checkbox"/> Readily available	<input type="checkbox"/> Up to date	<input checked="" type="checkbox"/> N/A
Remarks				
9.	Discharge Compliance Records			
	<input type="checkbox"/> Air	<input type="checkbox"/> Readily available	<input type="checkbox"/> Up to date	<input checked="" type="checkbox"/> N/A
	<input type="checkbox"/> Water (effluent)	<input type="checkbox"/> Readily available	<input type="checkbox"/> Up to date	<input checked="" type="checkbox"/> N/A
Remarks				
10.	Daily Access/Security Logs	<input type="checkbox"/> Readily available	<input type="checkbox"/> Up to date	<input checked="" type="checkbox"/> N/A
Remarks: <u>Guarded security gates at Robinson Street and Crisp Road restrict access to Hunters Point Naval Shipyard. City of San Francisco provides security and maintains access logs.</u>				
IV. O&M COSTS (Not Applicable for Site Inspection)				
V. ACCESS AND INSTITUTIONAL CONTROLS <input checked="" type="checkbox"/> Applicable <input type="checkbox"/> N/A				
A. Fencing				
1.	Fencing damaged	<input type="checkbox"/> Location shown on site map	<input checked="" type="checkbox"/> Gates secured	<input type="checkbox"/> N/A
Remarks <u>Good condition (Photograph 12).</u>				
B. Other Access Restrictions				
1.	Signs and other security measures	<input type="checkbox"/> Location shown on site map	<input type="checkbox"/> N/A	
Remarks <u>Area is completely fenced in, cones and flagging around active trench work, signs to warn against entry into buildings (Photographs 8, 14, and 15).</u>				
C. Institutional Controls (ICs)				
1.	Implementation and enforcement			
Site conditions imply ICs not properly implemented		<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No	<input type="checkbox"/> N/A
Site conditions imply ICs not being fully enforced		<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No	<input type="checkbox"/> N/A
Type of monitoring (e.g., self-reporting, drive by) <u>Routine Inspection</u>				
Frequency <u>Annually</u>				
Responsible party/agency <u>Navy and Navy O&M Contractors (Aptim Federal Services)</u>				
Reporting is up-to-date		<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> N/A
Reports are verified by the lead agency		<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> N/A
Specific requirements in deed or decision documents have been met		<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> N/A
Violations have been reported		<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input checked="" type="checkbox"/> N/A
Other problems or suggestions: <input type="checkbox"/> Report attached				
<u>None; no incompatible land uses observed or unauthorized intrusive activities.</u>				
2.	Adequacy	<input checked="" type="checkbox"/> ICs are adequate	<input type="checkbox"/> ICs are inadequate	<input type="checkbox"/> N/A
Remarks <u>None</u>				
D. General				

1.	Vandalism/trespassing	<input type="checkbox"/> Location shown on site map	<input checked="" type="checkbox"/> No vandalism evident
	Remarks <u>None</u>		
2.	Land use changes on site	<input checked="" type="checkbox"/> N/A	
	Remarks <u>None</u>		
3.	Land use changes off site	<input checked="" type="checkbox"/> N/A	
	Remarks <u>None</u>		
VI. GENERAL SITE CONDITIONS			
A. Roads <input checked="" type="checkbox"/> Applicable <input type="checkbox"/> N/A			
1.	Roads damaged	<input type="checkbox"/> Location shown on site map	<input checked="" type="checkbox"/> Roads adequate <input type="checkbox"/> N/A
	Remarks <u>None</u>		
B. Other Site Conditions			
Remarks <u>Active work is being conducted related to radiological rescanning efforts. Many areas of site are inaccessible while work is ongoing but stormwater best management practices are in use (Photographs 1, 3, 5, 7, 10, 13, 14, 15, and 16).</u>			
VII. COVERS <input checked="" type="checkbox"/> Applicable <input type="checkbox"/> N/A			
Note that the durable covers onsite are not engineered landfill covers.			
<u>The durable cover inspection was not completed because active excavation and trenching work is being conducted over the majority of the parcel; complete durable covers are expected to be reinstalled in accordance with the remedial design.</u>			
A. Surface			
B. Benches <input type="checkbox"/> Applicable <input checked="" type="checkbox"/> N/A (Horizontally constructed mounds of earth placed across a steep landfill side slope to interrupt the slope in order to slow down the velocity of surface runoff and intercept and convey the runoff to a lined channel.)			
C. Letdown Channels <input type="checkbox"/> Applicable <input checked="" type="checkbox"/> N/A (Channel lined with erosion control mats, riprap, grout bags, or gabions that descend down the steep side slope of the cover and will allow the runoff water collected by the benches to move off of the landfill cover without creating erosion gullies.)			
D. Cover Penetrations <input checked="" type="checkbox"/> Applicable <input type="checkbox"/> N/A			
5.	Settlement Monuments	<input type="checkbox"/> Located	<input checked="" type="checkbox"/> Routinely surveyed <input type="checkbox"/> N/A
	Remarks <u>Monument 3723 is scheduled for resurveying in 2025.</u>		
E. Gas Collection and Treatment <input type="checkbox"/> Applicable <input checked="" type="checkbox"/> N/A			
F. Cover Drainage Layer <input type="checkbox"/> Applicable <input checked="" type="checkbox"/> N/A			
G. Detention/Sedimentation Ponds <input type="checkbox"/> Applicable <input checked="" type="checkbox"/> N/A			
H. Retaining Walls <input type="checkbox"/> Applicable <input checked="" type="checkbox"/> N/A			
I. Perimeter Ditches/Off-Site Discharge <input type="checkbox"/> Applicable <input checked="" type="checkbox"/> N/A			

VIII. VERTICAL BARRIER WALLS <input type="checkbox"/> Applicable <input checked="" type="checkbox"/> N/A	
IX. GROUNDWATER/SURFACE WATER REMEDIES <input checked="" type="checkbox"/> Applicable <input type="checkbox"/> N/A	
A. Groundwater Extraction Wells, Pumps, and Pipelines	<input type="checkbox"/> Applicable <input checked="" type="checkbox"/> N/A
B. Surface Water Collection Structures, Pumps, and Pipelines	<input type="checkbox"/> Applicable <input checked="" type="checkbox"/> N/A
C. Treatment System	<input type="checkbox"/> Applicable <input checked="" type="checkbox"/> N/A
D. Monitoring Data	
1.	Monitoring Data <input checked="" type="checkbox"/> Is routinely submitted on time <input checked="" type="checkbox"/> Is of acceptable quality
2.	Monitoring data suggests: <input checked="" type="checkbox"/> Groundwater plume is effectively contained <input checked="" type="checkbox"/> Contaminant concentrations are declining <u>Monitoring well access is impeded by ongoing work. Concentrations of chemicals of concern (COCs) have been declining.</u>
D. Monitored Natural Attenuation	
1.	Monitoring Wells (natural attenuation remedy) <input checked="" type="checkbox"/> Properly secured/locked <input type="checkbox"/> Functioning <input type="checkbox"/> Routinely sampled <input type="checkbox"/> Good condition <input type="checkbox"/> All required wells located <input type="checkbox"/> Needs Maintenance <input type="checkbox"/> N/A Remarks <u>Monitoring wells are inspected, sampled, and repaired under the Basewide groundwater monitoring program and plume-specific remediation actions.</u>
X. OTHER REMEDIES - None	
XI. OVERALL OBSERVATIONS	
A. Implementation of the Remedy	
Describe issues and observations relating to whether the remedy is effective and functioning as designed. Begin with a brief statement of what the remedy is to accomplish (i.e., to contain contaminant plume, minimize infiltration and gas emission, etc.). <u>Remedy for Parcel G consists of durable covers, groundwater monitoring, and ICs to prevent exposure to COCs and radionuclides of concern in groundwater, soil, and structures. The remedy is functioning as intended, groundwater COCs are declining. Active trenching work is underway and it is expected that the durable covers will be repaired upon completion.</u>	
B. Adequacy of O&M	
Describe issues and observations related to the implementation and scope of O&M procedures. In particular, discuss their relationship to the current and long-term protectiveness of the remedy. <u>O&M of the durable covers will be reinstituted when the current investigation is complete and the covers are fully restored.</u>	
C. Early Indicators of Potential Remedy Problems	
Describe issues and observations such as unexpected changes in the cost or scope of O&M or a high frequency of unscheduled repairs, that suggest that the protectiveness of the remedy may be compromised in the future. <u>None identified.</u>	

D.	Opportunities for Optimization
	<p>Describe possible opportunities for optimization in monitoring tasks or the operation of the remedy.</p> <p><u>No opportunities outside of optimization is documented in the Basewide groundwater monitoring program for the groundwater remedy.</u></p>

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Parcel G Photograph 1: Excavation between Building 302 and 303. Facing northeast.
Photographed by: Marcella Navas/CH2M, 2/9/2023



Parcel G Photograph 2: Stormwater best management practice southeast of Building 402. Facing southwest. Photographed by: Marcella Navas/CH2M, 2/9/2023



Parcel G Photograph 3: Stockpile with berm surrounding located east of Building 419.
Facing northwest.

Photographed by: Marcella Navas/CH2M, 2/9/2023



Parcel G Photograph 4: Stormwater best management practice east of Building 418.
Facing southeast.

Photographed by: Marcella Navas/CH2M, 2/9/2023



Parcel G Photograph 5: Trenching east of Building 366. Facing northeast.

Photographed by: Marcella Navas/CH2M, 2/9/2023



Parcel G Photograph 6: Stormwater best management practice east of Building 415. Facing southeast.

Photographed by: Marcella Navas/CH2M, 2/9/2023



Parcel G Photograph 7: Trenching northwest of Building 363. Facing north.

Photographed by: Marcella Navas/CH2M, 2/9/2023



Parcel G Photograph 8: Warning sign outside of Building 351. Facing southwest.

Photographed by: Marcella Navas/CH2M, 2/9/2023



Parcel G Photograph 9: Stormwater best management practice along southeast portion of Parcel G along Buildings 415, 323, and 324. Facing southeast.

Photographed by: Marcella Navas/CH2M, 2/9/2023



Parcel G Photograph 10: Excavation west of Building 411 and east of Building 439. Facing northwest.

Photographed by: Marcella Navas/CH2M, 2/9/2023



Parcel G Photograph 11: Stormwater best management practice east of Building 409.
Facing northwest.

Photographed by: Marcella Navas/CH2M, 2/9/2023



Parcel G Photograph 12: Chain-link fence located east of Parcel G adjacent to Parcel D-1. Facing northwest.

Photographed by: Marcella Navas/CH2M, 2/9/2023



Parcel G Photograph 13: *Stockpile between Building 415 and Building 366. Facing west.*
Photographed by: Marcella Navas/CH2M, 2/9/2023



Parcel G Photograph 14: *Asphalt pavement cover, trenching, and stormwater best management practices southeast of Building 411. Facing northwest.*
Photographed by: Marcella Navas/CH2M, 2/9/2023



Parcel G Photograph 15: Trenching east of Building 411. Facing southwest.
Photographed by: Marcella Navas/CH2M, 2/9/2023



Parcel G Photograph 16: Trenching between Building 402 and 302 within Parcel G from UC-1. Facing southeast.
Photographed by: Marcella Navas/CH2M, 2/9/2023



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Five-Year Review Site Inspection Checklist

I. SITE INFORMATION			
Site name: Parcel E		Date of inspection: 2/9/23	
Location and Region: Hunters Point Naval Shipyard San Francisco, CA, Region 9		EPA ID: CA1170090087	
Agency, office, or company leading the five-year review: Department of the Navy		Weather/temperature: Sunny, 50s	
Remedy Includes: (Check all that apply) <div style="display: flex; flex-wrap: wrap;"> <div style="width: 50%;"> <input type="checkbox"/> Landfill cover/containment <input checked="" type="checkbox"/> Access controls <input checked="" type="checkbox"/> Institutional controls <input type="checkbox"/> Groundwater pump and treatment <input type="checkbox"/> Surface water collection and treatment <input checked="" type="checkbox"/> Other <u>Durable cover consisting of a soil cover, shoreline revetment (riprap), asphaltic concrete pavement, nonaqueous phase liquid (NAPL) removal</u> </div> <div style="width: 50%;"> <input checked="" type="checkbox"/> Monitored natural attenuation <input type="checkbox"/> Groundwater containment <input checked="" type="checkbox"/> Vertical barrier walls </div> </div>			
Attachments: <input type="checkbox"/> Inspection team roster attached <input checked="" type="checkbox"/> Site map attached			
II. INTERVIEWS (Interviews Conducted Separately)			
III. ON-SITE DOCUMENTS & RECORDS VERIFIED (Check all that apply)			
1.	O&M Documents <input type="checkbox"/> O&M manual <input type="checkbox"/> Readily available <input type="checkbox"/> Up to date <input checked="" type="checkbox"/> Not applicable (N/A) <input type="checkbox"/> As-built drawings <input type="checkbox"/> Readily available <input type="checkbox"/> Up to date <input checked="" type="checkbox"/> N/A <input type="checkbox"/> Maintenance logs <input type="checkbox"/> Readily available <input type="checkbox"/> Up to date <input checked="" type="checkbox"/> N/A Remarks <u>Remedy construction is currently underway; O&M has not begun</u>		
2.	Site-Specific Health and Safety Plan <input checked="" type="checkbox"/> Readily available <input type="checkbox"/> Up to date <input type="checkbox"/> N/A <input type="checkbox"/> Contingency plan/emergency response plan <input type="checkbox"/> Readily available <input type="checkbox"/> Up to date <input checked="" type="checkbox"/> N/A Remarks <u>Construction contractors' office.</u>		
3.	O&M and OSHA Training Records <input checked="" type="checkbox"/> Readily available <input type="checkbox"/> Up to date <input type="checkbox"/> N/A Remarks <u>Construction contractors' office.</u>		
4.	Permits and Service Agreements <div style="display: flex; flex-wrap: wrap;"> <div style="width: 50%;"> <input type="checkbox"/> Air discharge permit <input type="checkbox"/> Effluent discharge <input type="checkbox"/> Waste disposal, POTW <input type="checkbox"/> Other permits _____ </div> <div style="width: 50%;"> <input type="checkbox"/> Readily available <input type="checkbox"/> Up to date <input checked="" type="checkbox"/> N/A <input type="checkbox"/> Readily available <input type="checkbox"/> Up to date <input checked="" type="checkbox"/> N/A <input type="checkbox"/> Readily available <input type="checkbox"/> Up to date <input checked="" type="checkbox"/> N/A <input type="checkbox"/> Readily available <input type="checkbox"/> Up to date <input checked="" type="checkbox"/> N/A </div> </div> Remarks		
5.	Gas Generation Records <input type="checkbox"/> Readily available <input type="checkbox"/> Up to date <input checked="" type="checkbox"/> N/A Remarks		

6.	Settlement Monument Records	<input type="checkbox"/> Readily available	<input type="checkbox"/> Up to date	<input checked="" type="checkbox"/> N/A
Remarks <u>Remedy construction is ongoing, settlement monuments for O&M have not been established.</u>				
7.	Groundwater Monitoring Records	<input checked="" type="checkbox"/> Readily available	<input type="checkbox"/> Up to date	<input type="checkbox"/> N/A
Remarks: <u>Groundwater monitoring is reported in annual Basewide groundwater monitoring reports.</u>				
8.	Leachate Extraction Records	<input type="checkbox"/> Readily available	<input type="checkbox"/> Up to date	<input checked="" type="checkbox"/> N/A
Remarks				
9.	Discharge Compliance Records			
	<input type="checkbox"/> Air	<input type="checkbox"/> Readily available	<input type="checkbox"/> Up to date	<input checked="" type="checkbox"/> N/A
	<input type="checkbox"/> Water (effluent)	<input type="checkbox"/> Readily available	<input type="checkbox"/> Up to date	<input checked="" type="checkbox"/> N/A
Remarks				
10.	Daily Access/Security Logs	<input type="checkbox"/> Readily available	<input type="checkbox"/> Up to date	<input checked="" type="checkbox"/> N/A
Remarks: <u>Guarded security gates at Robinson Street and Crisp Road restrict access to Hunters Point Naval Shipyard. City of San Francisco provides security and maintains access logs.</u>				
IV. O&M COSTS (Not Applicable for Site Inspection)				
V. ACCESS AND INSTITUTIONAL CONTROLS <input checked="" type="checkbox"/> Applicable <input type="checkbox"/> N/A				
A. Fencing				
1.	Fencing damaged	<input type="checkbox"/> Location shown on site map	<input checked="" type="checkbox"/> Gates secured	<input type="checkbox"/> N/A
Remarks <u>Fencing in good condition.</u>				
B. Other Access Restrictions				
1.	Signs and other security measures	<input checked="" type="checkbox"/> Location shown on site map	<input type="checkbox"/> N/A	
Remarks <u>Signs legible and in good condition (Photographs 6, 11, 12, 17, and 18).</u>				
C. Institutional Controls (ICs) – Remedy ICs are not in fully in place, access and exposure is controlled during active construction per the Remedial Action Work Plan(s).				
D. General				
1.	Vandalism/trespassing	<input type="checkbox"/> Location shown on site map	<input checked="" type="checkbox"/> No vandalism evident	
Remarks <u>None</u>				
2.	Land use changes on site	<input checked="" type="checkbox"/> N/A		
Remarks <u>None</u>				
3.	Land use changes off site	<input checked="" type="checkbox"/> N/A		
Remarks <u>None</u>				
VI. GENERAL SITE CONDITIONS				
A. Roads <input checked="" type="checkbox"/> Applicable <input type="checkbox"/> N/A				
1.	Roads damaged	<input type="checkbox"/> Location shown on site map	<input checked="" type="checkbox"/> Roads adequate	<input type="checkbox"/> N/A
Remarks <u>Heavy construction is being conducted within the site and roads show some signs of wear.</u>				
B. Other Site Conditions				

Remarks <u>Ongoing construction through the majority of the parcel.</u>	
VII. COVERS <input checked="" type="checkbox"/> Applicable <input type="checkbox"/> N/A	
Note that the durable covers onsite are not engineered landfill covers. Cover is in various phases of construction so was not inspected. BMPs to control stormwater during construction are present.	
A. Surface – not constructed, not applicable for this FYR site inspection.	
B. Benches <input type="checkbox"/> Applicable <input checked="" type="checkbox"/> N/A (Horizontally constructed mounds of earth placed across a steep landfill side slope to interrupt the slope in order to slow down the velocity of surface runoff and intercept and convey the runoff to a lined channel.)	
C. Letdown Channels <input type="checkbox"/> Applicable <input checked="" type="checkbox"/> N/A (Channel lined with erosion control mats, riprap, grout bags, or gabions that descend down the steep side slope of the cover and will allow the runoff water collected by the benches to move off of the landfill cover without creating erosion gullies.)	
D. Cover Penetrations <input type="checkbox"/> Applicable <input checked="" type="checkbox"/> N/A	
5.	Settlement Monuments <input type="checkbox"/> Located <input type="checkbox"/> Routinely surveyed <input checked="" type="checkbox"/> N/A Remarks <u>Final settlement monuments will be installed when construction is complete.</u>
E. Gas Collection and Treatment <input type="checkbox"/> Applicable <input checked="" type="checkbox"/> N/A	
F. Cover Drainage Layer <input type="checkbox"/> Applicable <input checked="" type="checkbox"/> N/A	
G. Detention/Sedimentation Ponds <input type="checkbox"/> Applicable <input checked="" type="checkbox"/> N/A	
H. Retaining Walls <input type="checkbox"/> Applicable <input checked="" type="checkbox"/> N/A	
I. Perimeter Ditches/Off-Site Discharge <input type="checkbox"/> Applicable <input checked="" type="checkbox"/> N/A Remarks:	
VIII. VERTICAL BARRIER WALLS <input checked="" type="checkbox"/> Applicable <input type="checkbox"/> N/A Barrier wall is a remedy component but construction is in progress and was not inspected.	
IX. GROUNDWATER/SURFACE WATER REMEDIES <input checked="" type="checkbox"/> Applicable <input type="checkbox"/> N/A	
A. Groundwater Extraction Wells, Pumps, and Pipelines <input type="checkbox"/> Applicable <input checked="" type="checkbox"/> N/A	
B. Surface Water Collection Structures, Pumps, and Pipelines <input type="checkbox"/> Applicable <input checked="" type="checkbox"/> N/A	
C. Treatment System <input type="checkbox"/> Applicable <input checked="" type="checkbox"/> N/A	
D. Monitoring Data	
1.	Monitoring Data <input checked="" type="checkbox"/> Is routinely submitted on time <input checked="" type="checkbox"/> Is of acceptable quality
2.	Monitoring data suggests: <input checked="" type="checkbox"/> Groundwater plume is effectively contained <input checked="" type="checkbox"/> Contaminant concentrations are declining <u>Analytes are within or below historical average at Parcel E.</u>
D. Monitored Natural Attenuation	

1.	Monitoring Wells (natural attenuation remedy) <input checked="" type="checkbox"/> Properly secured/locked <input checked="" type="checkbox"/> Functioning <input checked="" type="checkbox"/> Routinely sampled <input checked="" type="checkbox"/> Good condition <input type="checkbox"/> All required wells located <input type="checkbox"/> Needs Maintenance <input type="checkbox"/> N/A Remarks <u>Monitoring wells are inspected, sampled, and repaired under the Basewide groundwater monitoring program and plume-specific remediation actions.</u>
X. OTHER REMEDIES - None	
XI. OVERALL OBSERVATIONS	
A.	Implementation of the Remedy
Describe issues and observations relating to whether the remedy is effective and functioning as designed. Begin with a brief statement of what the remedy is to accomplish (i.e., to contain contaminant plume, minimize infiltration and gas emission, etc.). <u>The remedy at Parcel E consists of excavation and offsite disposal, in situ soil vapor extraction, durable covers, groundwater remediation, barrier walls for groundwater and NAPL, groundwater monitoring, and ICs. The remedy is currently in the construction phase and has not been fully implemented. While construction is ongoing, dust monitoring and access control/signage are being implemented to prevent exposure to contamination.</u>	
B.	Adequacy of O&M
Describe issues and observations related to the implementation and scope of O&M procedures. In particular, discuss their relationship to the current and long-term protectiveness of the remedy. <u>Not applicable.</u>	
C.	Early Indicators of Potential Remedy Problems
Describe issues and observations such as unexpected changes in the cost or scope of O&M or a high frequency of unscheduled repairs, that suggest that the protectiveness of the remedy may be compromised in the future. <u>Not applicable.</u>	
D.	Opportunities for Optimization
Describe possible opportunities for optimization in monitoring tasks or the operation of the remedy. <u>Not applicable.</u>	



Parcel E Photograph 1: Soil stockpile at the intersection of J and Mahan Street with delineator barricading. Facing southwest.

Photographed by: Marcella Navas/CH2M, 2/9/2023



Parcel E Photograph 2: Shack on the corner of J Street and 6th Avenue. Facing northwest.

Photographed by: Marcella Navas/CH2M, 2/9/2023



Parcel E Photograph 3: Construction debris. Facing southeast.

Photographed by: Marcella Navas/CH2M, 2/9/2023



Parcel E Photograph 4: Stockpile with standing water adjacent. Facing southeast.

Photographed by: Marcella Navas/CH2M, 2/9/2023



Parcel E Photograph 5: Stockpile with standing water at corner of J and Mahan Street. Facing southwest.

Photographed by: Marcella Navas/CH2M, 2/9/2023



Parcel E Photograph 6: Restricted Area signage, stockpile, and best management practice on the corner of 6th Avenue and J Street. Facing southeast.

Photographed by: Marcella Navas/CH2M, 2/9/2023



Parcel E Photograph 7: Stockpile near shoreline southeast of J Street. Facing southeast.

Photographed by: Marcella Navas/CH2M, 2/9/2023



Parcel E Photograph 8: Stockpiles along fence line. Facing southwest.

Photographed by: Marcella Navas/CH2M, 2/9/2023



Parcel E Photograph 9: Stormwater management best management practices along corner of J Street and 6th Avenue. Facing southeast.

Photographed by: Marcella Navas/CH2M, 2/9/2023



Parcel E Photograph 10: Building 521 with cordoned work area and warning signs. Facing southwest.

Photographed by: Marcella Navas/CH2M, 2/9/2023



Parcel E Photograph 11: Stockpiles with warning signage and sediment control berms along 6th Avenue. Facing southwest.

Photographed by: Marcella Navas /CH2M, 2/9/2023



Parcel E Photograph 12: Caution and danger signs along fence line adjacent to H Street. Facing southwest.

Photographed by: Marcella Navas/CH2M, 2/9/2023



Parcel E Photograph 13: Overview of northeast end of Parcel E. Facing southwest.
Photographed by: Marcella Navas/CH2M, 2/9/2023



Parcel E Photograph 14: Overview of active construction area. Facing northeast.
Photographed by: Marcella Navas/CH2M, 2/9/2023



Parcel E Photograph 15: Stockpiles along embankment. Facing southeast.
Photographed by: Marcella Navas/CH2M, 2/9/2023



Parcel E Photograph 16: Monitoring well intact and in good condition. Facing northeast.
Photographed by: Marcella Navas/CH2M, 2/9/2023



Parcel E Photograph 17: Restricted area signage. Facing southwest

Photographed by: Marcella Navas/CH2M, 2/9/2023



Parcel E Photograph 18: Caution sign around active work. Facing southeast.

Photographed by: Marcella Navas /CH2M, 2/9/2023

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Five-Year Review Site Inspection Checklist

I. SITE INFORMATION			
Site name: Parcel E-2		Date of inspection: 2/9/23	
Location and Region: Hunters Point Naval Shipyard San Francisco, CA, Region 9		EPA ID: CA1170090087	
Agency, office, or company leading the five-year review: Department of the Navy		Weather/temperature: Sunny, 50s	
Remedy Includes: (Check all that apply) <input checked="" type="checkbox"/> Landfill cover/containment <input checked="" type="checkbox"/> Monitored natural attenuation <input checked="" type="checkbox"/> Access controls <input type="checkbox"/> Groundwater containment <input checked="" type="checkbox"/> Institutional controls <input checked="" type="checkbox"/> Vertical barrier walls <input type="checkbox"/> Groundwater pump and treatment <input type="checkbox"/> Surface water collection and treatment <input checked="" type="checkbox"/> Other <u>Durable cover consisting of a soil cover, shoreline revetment (riprap), asphaltic concrete pavement</u>			
Attachments: <input type="checkbox"/> Inspection team roster attached <input checked="" type="checkbox"/> Site map attached			
II. INTERVIEWS (Interviews Conducted Separately)			
III. ON-SITE DOCUMENTS & RECORDS VERIFIED (Check all that apply)			
1.	O&M Documents <input checked="" type="checkbox"/> O&M manual <input type="checkbox"/> Readily available <input type="checkbox"/> Up to date <input type="checkbox"/> Not applicable (N/A) <input type="checkbox"/> As-built drawings <input type="checkbox"/> Readily available <input type="checkbox"/> Up to date <input checked="" type="checkbox"/> N/A <input type="checkbox"/> Maintenance logs <input type="checkbox"/> Readily available <input type="checkbox"/> Up to date <input checked="" type="checkbox"/> N/A Remarks <u>O&M ongoing for interim cover and gas control and monitoring system.</u>		
2.	Site-Specific Health and Safety Plan <input checked="" type="checkbox"/> Readily available <input type="checkbox"/> Up to date <input type="checkbox"/> N/A <input type="checkbox"/> Contingency plan/emergency response plan <input type="checkbox"/> Readily available <input type="checkbox"/> Up to date <input checked="" type="checkbox"/> N/A Remarks <u>Construction contractors' office.</u>		
3.	O&M and OSHA Training Records <input checked="" type="checkbox"/> Readily available <input type="checkbox"/> Up to date <input type="checkbox"/> N/A Remarks <u>Construction contractors' office.</u>		
4.	Permits and Service Agreements <input type="checkbox"/> Air discharge permit <input type="checkbox"/> Readily available <input type="checkbox"/> Up to date <input checked="" type="checkbox"/> N/A <input type="checkbox"/> Effluent discharge <input type="checkbox"/> Readily available <input type="checkbox"/> Up to date <input checked="" type="checkbox"/> N/A <input type="checkbox"/> Waste disposal, POTW <input type="checkbox"/> Readily available <input type="checkbox"/> Up to date <input checked="" type="checkbox"/> N/A <input type="checkbox"/> Other permits _____ <input type="checkbox"/> Readily available <input type="checkbox"/> Up to date <input checked="" type="checkbox"/> N/A Remarks _____		
5.	Gas Generation Records <input checked="" type="checkbox"/> Readily available <input checked="" type="checkbox"/> Up to date <input type="checkbox"/> N/A Remarks <u>Gas monitoring records available in Administrative Record.</u>		

6.	Settlement Monument Records	<input type="checkbox"/> Readily available	<input type="checkbox"/> Up to date	<input checked="" type="checkbox"/> N/A
Remarks <u>Landfill settlement surveys available in O&M reports for interim cover.</u>				
7.	Groundwater Monitoring Records	<input checked="" type="checkbox"/> Readily available	<input type="checkbox"/> Up to date	<input type="checkbox"/> N/A
Remarks: <u>Groundwater monitoring is reported in annual Basewide groundwater monitoring reports.</u>				
8.	Leachate Extraction Records	<input type="checkbox"/> Readily available	<input type="checkbox"/> Up to date	<input checked="" type="checkbox"/> N/A
Remarks				
9.	Discharge Compliance Records			
	<input type="checkbox"/> Air	<input type="checkbox"/> Readily available	<input type="checkbox"/> Up to date	<input checked="" type="checkbox"/> N/A
	<input type="checkbox"/> Water (effluent)	<input type="checkbox"/> Readily available	<input type="checkbox"/> Up to date	<input checked="" type="checkbox"/> N/A
Remarks				
10.	Daily Access/Security Logs	<input type="checkbox"/> Readily available	<input type="checkbox"/> Up to date	<input checked="" type="checkbox"/> N/A
Remarks: <u>Guarded security gates at Robinson Street and Crisp Road restrict access to Hunters Point Naval Shipyard. City of San Francisco provides security and maintains access logs.</u>				
IV. O&M COSTS (Not Applicable for Site Inspection)				
V. ACCESS AND INSTITUTIONAL CONTROLS <input checked="" type="checkbox"/> Applicable <input type="checkbox"/> N/A				
A. Fencing				
1.	Fencing damaged	<input type="checkbox"/> Location shown on site map	<input checked="" type="checkbox"/> Gates secured	<input type="checkbox"/> N/A
Remarks <u>Fencing in good condition.</u>				
B. Other Access Restrictions				
1.	Signs and other security measures	<input type="checkbox"/> Location shown on site map	<input type="checkbox"/> N/A	
Remarks <u>Signs present and legible.</u>				
C. Institutional Controls (ICs) - Remedy ICs are not in fully in place, access and exposure is controlled during active construction per the Remedial Action Work Plan(s).				
D. General				
1.	Vandalism/trespassing	<input type="checkbox"/> Location shown on site map	<input type="checkbox"/> No vandalism evident	
Remarks <u>Graffiti present along inside of seawall (Photographs 7, 9, and 10).</u>				
2.	Land use changes on site	<input checked="" type="checkbox"/> N/A		
Remarks <u>None</u>				
3.	Land use changes off site	<input checked="" type="checkbox"/> N/A		
Remarks <u>None</u>				
VI. GENERAL SITE CONDITIONS				
A. Roads <input checked="" type="checkbox"/> Applicable <input type="checkbox"/> N/A				
1.	Roads damaged	<input type="checkbox"/> Location shown on site map	<input checked="" type="checkbox"/> Roads adequate	<input type="checkbox"/> N/A
Remarks <u>Access roads are adequate; majority of the area is a construction site.</u>				
B. Other Site Conditions				
Remarks <u>Ongoing construction through the majority of the parcel.</u>				

VII. LANDFILL COVERS <input checked="" type="checkbox"/> Applicable <input type="checkbox"/> N/A	
<u>Landfill cover is currently under construction and was not inspected. An interim soil cover is in place while the final cover is being installed to maintain protectiveness.</u>	
A. Landfill Surface	
6.	Alternative Cover (Shoreline Revetment) <input type="checkbox"/> N/A Remarks <u>Rocks and sea wall intact. Water accumulated behind sea wall may be a result of overtopping or from heavy rains that recently occurred (Photographs 7, 9, and 10).</u>
B. Benches <input type="checkbox"/> Applicable <input checked="" type="checkbox"/> N/A (Horizontally constructed mounds of earth placed across a steep landfill side slope to interrupt the slope in order to slow down the velocity of surface runoff and intercept and convey the runoff to a lined channel.)	
C. Letdown Channels <input type="checkbox"/> Applicable <input checked="" type="checkbox"/> N/A (Channel lined with erosion control mats, riprap, grout bags, or gabions that descend down the steep side slope of the cover and will allow the runoff water collected by the benches to move off of the landfill cover without creating erosion gullies.)	
D. Cover Penetrations <input type="checkbox"/> Applicable <input checked="" type="checkbox"/> N/A – Cover has not been installed.	
E. Gas Collection and Treatment <input checked="" type="checkbox"/> Applicable <input type="checkbox"/> N/A <u>An interim landfill collection and venting system is currently in place and monitored. Monitoring reports are readily available in the Administrative Record.</u>	
F. Cover Drainage Layer <input type="checkbox"/> Applicable <input checked="" type="checkbox"/> N/A	
G. Detention/Sedimentation Ponds <input type="checkbox"/> Applicable <input checked="" type="checkbox"/> N/A	
H. Retaining Walls <input checked="" type="checkbox"/> Applicable <input type="checkbox"/> N/A - Seawall	
1.	Deformations <input type="checkbox"/> Location shown on site map <input checked="" type="checkbox"/> Deformation not evident Remarks <u>None</u>
2.	Degradation <input type="checkbox"/> Location shown on site map <input checked="" type="checkbox"/> Degradation not evident Remarks <u>None</u>
I. Perimeter Ditches/Off-Site Discharge <input type="checkbox"/> Applicable <input checked="" type="checkbox"/> N/A Remarks: <u>Not observed.</u>	
1.	Siltation <input type="checkbox"/> Location shown on site map <input type="checkbox"/> Siltation not evident Remarks <u>Stormwater best management practices employed during remedy construction work.</u>
2.	Vegetative Growth <input type="checkbox"/> Location shown on site map <input checked="" type="checkbox"/> N/A <input type="checkbox"/> Vegetation does not impede flow Remarks <u>None</u>
3.	Erosion <input type="checkbox"/> Location shown on site map <input type="checkbox"/> Erosion not evident Remarks <u>Active construction site.</u>
4.	Discharge Structure <input type="checkbox"/> Functioning <input checked="" type="checkbox"/> N/A Remarks <u>Not observed.</u>
VIII. VERTICAL BARRIER WALLS <input checked="" type="checkbox"/> Applicable <input type="checkbox"/> N/A	

1.	Settlement <input type="checkbox"/> Location shown on site map <input type="checkbox"/> Settlement not evident Remarks <u>Area not accessible from construction.</u>
2.	Performance Monitoring Type of monitoring _____ <input type="checkbox"/> Performance not monitored Remarks <u>Remedy is in construction phase.</u>
IX. GROUNDWATER/SURFACE WATER REMEDIES <input checked="" type="checkbox"/> Applicable <input type="checkbox"/> N/A	
A. Groundwater Extraction Wells, Pumps, and Pipelines <input type="checkbox"/> Applicable <input checked="" type="checkbox"/> N/A	
B. Surface Water Collection Structures, Pumps, and Pipelines <input type="checkbox"/> Applicable <input checked="" type="checkbox"/> N/A	
C. Treatment System <input type="checkbox"/> Applicable <input checked="" type="checkbox"/> N/A	
D. Monitoring Data	
1.	Monitoring Data <input checked="" type="checkbox"/> Is routinely submitted on time <input checked="" type="checkbox"/> Is of acceptable quality
2.	Monitoring data suggests: <input checked="" type="checkbox"/> Groundwater plume is effectively contained <input checked="" type="checkbox"/> Contaminant concentrations are declining <u>Groundwater chemicals of concern (COCs) continue to exceed remediation goals but concentrations are similar to or below historical levels.</u>
D. Monitored Natural Attenuation	
1.	Monitoring Wells (natural attenuation remedy) <input type="checkbox"/> Properly secured/locked <input checked="" type="checkbox"/> Functioning <input checked="" type="checkbox"/> Routinely sampled <input type="checkbox"/> Good condition <input type="checkbox"/> All required wells located <input type="checkbox"/> Needs Maintenance <input type="checkbox"/> N/A Remarks <u>Wells affected by cap construction will be restored.</u>
X. OTHER REMEDIES - None	
XI. OVERALL OBSERVATIONS	
A. Implementation of the Remedy	
Describe issues and observations relating to whether the remedy is effective and functioning as designed. Begin with a brief statement of what the remedy is to accomplish (i.e., to contain contaminant plume, minimize infiltration and gas emission, etc.). <u>The remedy at Parcel E-2 consists of excavation and removal of contaminated soil, installation of a soil cover, installation of belowground barrier walls, removal and treatment of landfill gas, shoreline revetment, and monitoring and ICs. The remedy is currently under construction. While construction is ongoing, an interim cover and landfill gas monitoring and collection system is in place.</u>	
B. Adequacy of O&M	
Describe issues and observations related to the implementation and scope of O&M procedures. In particular, discuss their relationship to the current and long-term protectiveness of the remedy. <u>Not applicable.</u>	
C. Early Indicators of Potential Remedy Problems	

Describe issues and observations such as unexpected changes in the cost or scope of O&M or a high frequency of unscheduled repairs, that suggest that the protectiveness of the remedy may be compromised in the future. <u>Not applicable.</u>	
D.	Opportunities for Optimization
Describe possible opportunities for optimization in monitoring tasks or the operation of the remedy. <u>Not applicable.</u>	

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Parcel E-2 Photograph 1: Active construction with stormwater best management practices. Facing southeast.

Photographed by: Marcella Navas/CH2M, 2/9/2023



Parcel E-2 Photograph 2: Storage containers onsite for generators. Facing southwest.

Photographed by: Marcella Navas/CH2M, 2/9/2023



Parcel E-2 Photograph 3: *Small excavated area within soil cover construction area. Facing southwest.*

Photographed by: Marcella Navas/CH2M, 2/9/2023



Parcel E-2 Photograph 4: *Graded area with marked monitoring point. Facing southeast.*

Photographed by: Marcella Navas/CH2M, 2/9/2023



Parcel E-2 Photograph 5: Graded area with marked monitoring point. Facing southeast.
Photographed by: Marcella Navas/CH2M, 2/9/2023



Parcel E-2 Photograph 6: Storage containers and laydown area. Facing west.
Photographed by: Marcella Navas/CH2M, 2/9/2023



Parcel E-2 Photograph 7: Accumulated water and monitoring well adjacent to shoreline revetment and seawall. Facing southwest.

Photographed by: Marcella Navas/CH2M, 2/9/2023



Parcel E-2 Photograph 8: Monitoring well located in soil cover area. Facing southwest.

Photographed by: Marcella Navas/CH2M, 2/9/2023



Parcel E-2 Photograph 9: Accumulated water behind seawall in active construction area. Facing southeast.

Photographed by: Marcella Navas/CH2M, 2/9/2023



Parcel E-2 Photograph 10: Graffiti along seawall. Facing southwest.

Photographed by: Marcella Navas/CH2M, 2/9/2023



Parcel E2 Photograph 11: Small excavated area with sandbags. Facing southwest.
Photographed by: Marcella Navas/CH2M, 2/9/2023



Parcel E-2 Photograph 12: Active soil cover construction area with seawall in the background. Facing southeast.
Photographed by: Marcella Navas/CH2M, 2/9/2023



Parcel E-2 Photograph 13: Accumulated water within retention area, active construction site. Facing southwest.

Photographed by: Marcella Navas/CH2M, 2/9/2023



Parcel E-2 Photograph 14: Stockpile along J Street surrounded by stormwater best management practices. Facing southeast.

Photographed by: Marcella Navas/CH2M, 2/9/2023



Parcel E-2 Photograph 15: Stockpiles along J Street with swale surrounding. Facing northeast.

Photographed by: Marcella Navas/CH2M, 2/9/2023

Five-Year Review Site Inspection Checklist

I. SITE INFORMATION																			
Site name: Parcel UC-1, UC-2, UC-3		Date of inspection: 2/9/23																	
Location and Region: Hunters Point Naval Shipyard San Francisco, CA, Region 9		EPA ID: CA1170090087																	
Agency, office, or company leading the five-year review: Department of the Navy		Weather/temperature: Sunny, 50s																	
Remedy Includes: (Check all that apply) <table border="0"> <tr> <td><input type="checkbox"/> Landfill cover/containment</td> <td><input type="checkbox"/> Monitored natural attenuation</td> </tr> <tr> <td><input type="checkbox"/> Access controls</td> <td><input type="checkbox"/> Groundwater containment</td> </tr> <tr> <td><input checked="" type="checkbox"/> Institutional controls</td> <td><input type="checkbox"/> Vertical barrier walls</td> </tr> <tr> <td><input type="checkbox"/> Groundwater pump and treatment</td> <td></td> </tr> <tr> <td><input type="checkbox"/> Surface water collection and treatment</td> <td></td> </tr> <tr> <td colspan="2"><input checked="" type="checkbox"/> Other <u>Durable cover consisting of a soil cover and/or asphaltic concrete pavement.</u></td> </tr> </table>				<input type="checkbox"/> Landfill cover/containment	<input type="checkbox"/> Monitored natural attenuation	<input type="checkbox"/> Access controls	<input type="checkbox"/> Groundwater containment	<input checked="" type="checkbox"/> Institutional controls	<input type="checkbox"/> Vertical barrier walls	<input type="checkbox"/> Groundwater pump and treatment		<input type="checkbox"/> Surface water collection and treatment		<input checked="" type="checkbox"/> Other <u>Durable cover consisting of a soil cover and/or asphaltic concrete pavement.</u>					
<input type="checkbox"/> Landfill cover/containment	<input type="checkbox"/> Monitored natural attenuation																		
<input type="checkbox"/> Access controls	<input type="checkbox"/> Groundwater containment																		
<input checked="" type="checkbox"/> Institutional controls	<input type="checkbox"/> Vertical barrier walls																		
<input type="checkbox"/> Groundwater pump and treatment																			
<input type="checkbox"/> Surface water collection and treatment																			
<input checked="" type="checkbox"/> Other <u>Durable cover consisting of a soil cover and/or asphaltic concrete pavement.</u>																			
Attachments: <input type="checkbox"/> Inspection team roster attached <input checked="" type="checkbox"/> Site map attached																			
II. INTERVIEWS (Interviews Conducted Separately)																			
III. ON-SITE DOCUMENTS & RECORDS VERIFIED (Check all that apply)																			
1.	O&M Documents <input checked="" type="checkbox"/> O&M manual <input checked="" type="checkbox"/> Readily available <input type="checkbox"/> Up to date <input type="checkbox"/> Not applicable (N/A) <input checked="" type="checkbox"/> As-built drawings <input checked="" type="checkbox"/> Readily available <input type="checkbox"/> Up to date <input type="checkbox"/> N/A <input type="checkbox"/> Maintenance logs <input type="checkbox"/> Readily available <input type="checkbox"/> Up to date <input checked="" type="checkbox"/> N/A Remarks <u>Documents available in the Administrative Record and O&M contractors' offices.</u>																		
2.	Site-Specific Health and Safety Plan <input type="checkbox"/> Readily available <input type="checkbox"/> Up to date <input type="checkbox"/> N/A <input type="checkbox"/> Contingency plan/emergency response plan <input type="checkbox"/> Readily available <input type="checkbox"/> Up to date <input checked="" type="checkbox"/> N/A Remarks <u>Available onsite during inspections.</u>																		
3.	O&M and OSHA Training Records <input type="checkbox"/> Readily available <input type="checkbox"/> Up to date <input type="checkbox"/> N/A Remarks <u>Available in O&M contractor office.</u>																		
4.	Permits and Service Agreements <table border="0"> <tr> <td><input type="checkbox"/> Air discharge permit</td> <td><input type="checkbox"/> Readily available</td> <td><input type="checkbox"/> Up to date</td> <td><input checked="" type="checkbox"/> N/A</td> </tr> <tr> <td><input type="checkbox"/> Effluent discharge</td> <td><input type="checkbox"/> Readily available</td> <td><input type="checkbox"/> Up to date</td> <td><input checked="" type="checkbox"/> N/A</td> </tr> <tr> <td><input type="checkbox"/> Waste disposal, POTW</td> <td><input type="checkbox"/> Readily available</td> <td><input type="checkbox"/> Up to date</td> <td><input checked="" type="checkbox"/> N/A</td> </tr> <tr> <td><input type="checkbox"/> Other permits _____</td> <td><input type="checkbox"/> Readily available</td> <td><input type="checkbox"/> Up to date</td> <td><input checked="" type="checkbox"/> N/A</td> </tr> </table> Remarks _____			<input type="checkbox"/> Air discharge permit	<input type="checkbox"/> Readily available	<input type="checkbox"/> Up to date	<input checked="" type="checkbox"/> N/A	<input type="checkbox"/> Effluent discharge	<input type="checkbox"/> Readily available	<input type="checkbox"/> Up to date	<input checked="" type="checkbox"/> N/A	<input type="checkbox"/> Waste disposal, POTW	<input type="checkbox"/> Readily available	<input type="checkbox"/> Up to date	<input checked="" type="checkbox"/> N/A	<input type="checkbox"/> Other permits _____	<input type="checkbox"/> Readily available	<input type="checkbox"/> Up to date	<input checked="" type="checkbox"/> N/A
<input type="checkbox"/> Air discharge permit	<input type="checkbox"/> Readily available	<input type="checkbox"/> Up to date	<input checked="" type="checkbox"/> N/A																
<input type="checkbox"/> Effluent discharge	<input type="checkbox"/> Readily available	<input type="checkbox"/> Up to date	<input checked="" type="checkbox"/> N/A																
<input type="checkbox"/> Waste disposal, POTW	<input type="checkbox"/> Readily available	<input type="checkbox"/> Up to date	<input checked="" type="checkbox"/> N/A																
<input type="checkbox"/> Other permits _____	<input type="checkbox"/> Readily available	<input type="checkbox"/> Up to date	<input checked="" type="checkbox"/> N/A																
5.	Gas Generation Records <input type="checkbox"/> Readily available <input type="checkbox"/> Up to date <input checked="" type="checkbox"/> N/A Remarks _____																		

6.	Settlement Monument Records	<input type="checkbox"/> Readily available	<input type="checkbox"/> Up to date	<input checked="" type="checkbox"/> N/A
Remarks				
7.	Groundwater Monitoring Records	<input type="checkbox"/> Readily available	<input type="checkbox"/> Up to date	<input checked="" type="checkbox"/> N/A
Remarks:				
8.	Leachate Extraction Records	<input type="checkbox"/> Readily available	<input type="checkbox"/> Up to date	<input checked="" type="checkbox"/> N/A
Remarks				
9.	Discharge Compliance Records			
	<input type="checkbox"/> Air	<input type="checkbox"/> Readily available	<input type="checkbox"/> Up to date	<input checked="" type="checkbox"/> N/A
	<input type="checkbox"/> Water (effluent)	<input type="checkbox"/> Readily available	<input type="checkbox"/> Up to date	<input checked="" type="checkbox"/> N/A
Remarks				
10.	Daily Access/Security Logs	<input type="checkbox"/> Readily available	<input type="checkbox"/> Up to date	<input checked="" type="checkbox"/> N/A
Remarks: <u>Guarded security gates at Robinson Street and Crisp Road restrict access to Hunters Point Naval Shipyard. City of San Francisco provides security and maintains access logs.</u>				
IV. O&M COSTS (Not Applicable for Site Inspection)				
V. ACCESS AND INSTITUTIONAL CONTROLS <input checked="" type="checkbox"/> Applicable <input type="checkbox"/> N/A				
A. Fencing				
1.	Fencing damaged	<input type="checkbox"/> Location shown on site map	<input checked="" type="checkbox"/> Gates secured	<input type="checkbox"/> N/A
Remarks <u>Fencing to keep out of other parcels adjacent to UC-1, -2, and -3 (UC-1 Photographs 1, 2, 4, 5, and 6).</u>				
B. Other Access Restrictions				
1.	Signs and other security measures	<input type="checkbox"/> Location shown on site map	<input checked="" type="checkbox"/> N/A	
Remarks				
C. Institutional Controls (ICs)				
1.	Implementation and enforcement			
	Site conditions imply ICs not properly implemented	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No	<input type="checkbox"/> N/A
	Site conditions imply ICs not being fully enforced	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No	<input type="checkbox"/> N/A
	Type of monitoring (e.g., self-reporting, drive by) <u>Routine Inspection</u>			
	Frequency <u>Annually</u>			
	Responsible party/agency <u>Navy and Navy O&M Contractors (UC-3), OCII O&M Contractors (UC-1 and UC-2)</u>			
	Reporting is up-to-date	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> N/A
	Reports are verified by the lead agency	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> N/A
	Specific requirements in deed or decision documents have been met	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> N/A
	Violations have been reported	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input checked="" type="checkbox"/> N/A
	Other problems or suggestions: <input type="checkbox"/> Report attached			
2.	Adequacy	<input checked="" type="checkbox"/> ICs are adequate	<input type="checkbox"/> ICs are inadequate	<input type="checkbox"/> N/A
Remarks <u>None</u>				

D. General			
1.	Vandalism/trespassing Remarks <u>None</u>	<input type="checkbox"/> Location shown on site map	<input checked="" type="checkbox"/> No vandalism evident
2.	Land use changes on site Remarks <u>None</u>	<input checked="" type="checkbox"/> N/A	
3.	Land use changes off site Remarks <u>None</u>	<input checked="" type="checkbox"/> N/A	
VI. GENERAL SITE CONDITIONS			
A. Roads <input checked="" type="checkbox"/> Applicable <input type="checkbox"/> N/A			
1.	Roads damaged Remarks <u>Areas where durable cover has been restored apparent (UC-2 Photographs 1, 2, and 3).</u>	<input type="checkbox"/> Location shown on site map	<input checked="" type="checkbox"/> Roads adequate <input type="checkbox"/> N/A
B. Other Site Conditions			
Remarks <u>Vegetation observed around Building 815 in cracks around foundation.</u>			
VII. COVERS <input checked="" type="checkbox"/> Applicable <input type="checkbox"/> N/A			
Note that the durable covers onsite are not engineered landfill covers.			
A. Surface			
1.	Settlement (Low spots) Remarks _____	<input type="checkbox"/> Location shown on site map	<input checked="" type="checkbox"/> Settlement not evident
2.	Cracks Remarks <u>Minor cracking along Crisp Road (UC-3, Photograph 6) from increased heavy equipment and truck traffic.</u>	<input type="checkbox"/> Location shown on site map	<input type="checkbox"/> Cracking not evident
3.	Erosion Remarks _____	<input type="checkbox"/> Location shown on site map	<input checked="" type="checkbox"/> Erosion not evident
4.	Holes Remarks _____	<input type="checkbox"/> Location shown on site map	<input checked="" type="checkbox"/> Holes not evident
5.	Vegetative Cover <input type="checkbox"/> Trees/Shrubs (indicate size and locations on a diagram) Remarks _____	<input checked="" type="checkbox"/> Grass <input checked="" type="checkbox"/> Cover properly established	<input checked="" type="checkbox"/> No signs of stress
6.	Alternative Cover Remarks _____	<input checked="" type="checkbox"/> N/A	
7.	Bulges Remarks _____	<input type="checkbox"/> Location shown on site map	<input checked="" type="checkbox"/> Bulges not evident
8.	Wet Areas/Water Damage <input type="checkbox"/> Wet areas <input type="checkbox"/> Ponding <input type="checkbox"/> Seeps <input type="checkbox"/> Soft subgrade Remarks _____	<input checked="" type="checkbox"/> Wet areas/water damage not evident <input type="checkbox"/> Location shown on site map <input type="checkbox"/> Location shown on site map <input type="checkbox"/> Location shown on site map <input type="checkbox"/> Location shown on site map	Areal extent _____ Areal extent _____ Areal extent _____ Areal extent _____

9.	Slope Instability	<input type="checkbox"/> Slides	<input type="checkbox"/> Location shown on site map	<input type="checkbox"/> No evidence of slope instability
Remarks <u>Not applicable.</u>				
B. Benches <input type="checkbox"/> Applicable <input checked="" type="checkbox"/> N/A (Horizontally constructed mounds of earth placed across a steep landfill side slope to interrupt the slope in order to slow down the velocity of surface runoff and intercept and convey the runoff to a lined channel.)				
C. Letdown Channels <input type="checkbox"/> Applicable <input checked="" type="checkbox"/> N/A (Channel lined with erosion control mats, riprap, grout bags, or gabions that descend down the steep side slope of the cover and will allow the runoff water collected by the benches to move off of the landfill cover without creating erosion gullies.)				
D. Cover Penetrations <input type="checkbox"/> Applicable <input checked="" type="checkbox"/> N/A				
5.	Settlement Monuments	<input type="checkbox"/> Located	<input type="checkbox"/> Routinely surveyed	<input checked="" type="checkbox"/> N/A
Remarks _____				
E. Gas Collection and Treatment <input type="checkbox"/> Applicable <input checked="" type="checkbox"/> N/A				
F. Cover Drainage Layer <input type="checkbox"/> Applicable <input checked="" type="checkbox"/> N/A				
G. Detention/Sedimentation Ponds <input type="checkbox"/> Applicable <input checked="" type="checkbox"/> N/A				
H. Retaining Walls <input type="checkbox"/> Applicable <input checked="" type="checkbox"/> N/A				
I. Perimeter Ditches/Off-Site Discharge <input checked="" type="checkbox"/> Applicable <input type="checkbox"/> N/A				
1.	Siltation	<input type="checkbox"/> Location shown on site map	<input checked="" type="checkbox"/> Siltation not evident	
Remarks _____				
2.	Vegetative Growth	<input type="checkbox"/> Location shown on site map	<input checked="" type="checkbox"/> N/A	
<input checked="" type="checkbox"/> Vegetation does not impede flow				
Remarks _____				
3.	Erosion	<input type="checkbox"/> Location shown on site map	<input checked="" type="checkbox"/> Erosion not evident	
Remarks _____				
4.	Discharge Structure	<input type="checkbox"/> Functioning	<input checked="" type="checkbox"/> N/A	
Remarks _____				
VIII. VERTICAL BARRIER WALLS <input type="checkbox"/> Applicable <input checked="" type="checkbox"/> N/A				
IX. GROUNDWATER/SURFACE WATER REMEDIES <input type="checkbox"/> Applicable <input checked="" type="checkbox"/> N/A				
X. OTHER REMEDIES - None				
XI. OVERALL OBSERVATIONS				

A.	Implementation of the Remedy
	<p>Describe issues and observations relating to whether the remedy is effective and functioning as designed. Begin with a brief statement of what the remedy is to accomplish (i.e., to contain contaminant plume, minimize infiltration and gas emission, etc.).</p> <p><u>Remedies at Parcels UC-1, UC-2, and UC-3 consist of durable cover and ICs. Cover is in good condition and monitored regularly. UC-1 and UC-2 were transferred and are monitored by the OCII contractor. Reports indicate remedy is functioning and no land use control violations have occurred.</u></p>
B.	Adequacy of O&M
	<p>Describe issues and observations related to the implementation and scope of O&M procedures. In particular, discuss their relationship to the current and long-term protectiveness of the remedy.</p> <p><u>None.</u></p>
C.	Early Indicators of Potential Remedy Problems
	<p>Describe issues and observations such as unexpected changes in the cost or scope of O&M or a high frequency of unscheduled repairs, that suggest that the protectiveness of the remedy may be compromised in the future.</p> <p><u>None.</u></p>
D.	Opportunities for Optimization
	<p>Describe possible opportunities for optimization in monitoring tasks or the operation of the remedy.</p> <p><u>None identified.</u></p>

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Parcel UC-1 Photograph 1: Chain-link fence along Parcel UC-1 and Parcel G. Facing south.

Photographed by: Marcella Navas/CH2M, 2/9/2023



Parcel UC-1 Photograph 2: Chain-link fence along Parcel UC-1 and Parcel G. Facing northeast.

Photographed by: Marcella Navas/CH2M, 2/9/2023



Parcel UC-1 Photograph 3: Asphalt pavement cover along Spear Avenue. Facing northeast.

Photographed by: Marcella Navas/CH2M, 2/9/2023



Parcel UC-1 Photograph 4: Chain-link fence along Parcel UC-1 north of Building 402. Facing southeast.

Photographed by: Marcella Navas/CH2M, 2/9/2023



Parcel UC-1 Photograph 5: Chain-link fence along Parcel UC-1 north of Building 401.
Facing southeast.

Photographed by: Marcella Navas/CH2M, 2/9/2023



Parcel UC-1 Photograph 6: Chain-link fence along Spear Avenue between Buildings 401
and 402. *Facing south.*

Photographed by: Marcella Navas/CH2M, 2/9/2023



Parcel UC-1 Photograph 7: Asphalt pavement cover between Horn and Spear Avenue.
Facing north.

Photographed by: Marcella Navas/CH2M, 2/9/2023



Parcel UC-2 Photograph 1: Asphalt pavement cover along Fisher Avenue. *Facing northeast.*

Photographed by: Marcella Navas/CH2M, 2/9/2023



Parcel UC-2 Photograph 2: Asphalt pavement cover along Fisher Avenue. Facing northeast.

Photographed by: Marcella Navas/CH2M, 2/9/2023



Parcel UC-2 Photograph 3: Asphalt pavement cover along Fisher Avenue. Facing northeast.

Photographed by: Marcella Navas/CH2M, 2/9/2023



Parcel UC-3 Photograph 1: Gravel located south of Building 815. Facing southeast.
Photographed by: Marcella Navas/CH2M, 2/9/2023



Parcel UC-3 Photograph 2: Gravel located south of Building 815. Facing northwest.
Photographed by: Marcella Navas/CH2M, 2/9/2023



Parcel UC-3 Photograph 3: Overgrowth of vegetation south of Building 815. Facing north.

Photographed by: Marcella Navas/CH2M, 2/9/2023



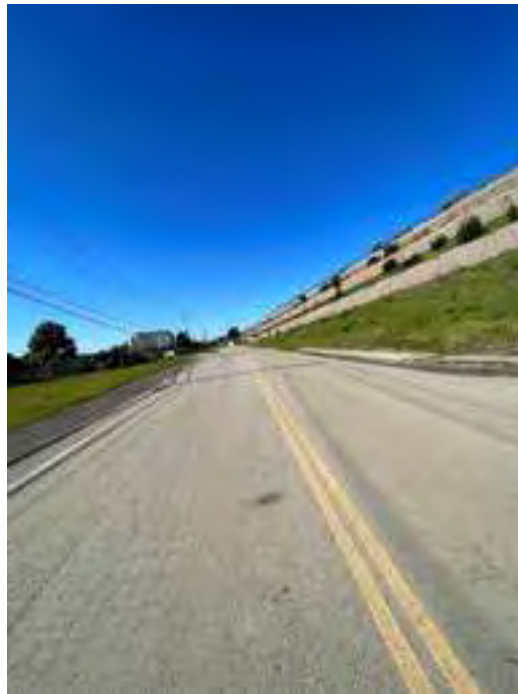
Parcel UC-3 Photograph 4: Asphalt pavement cover southeast of Building 815. Facing northwest.

Photographed by: Marcella Navas/CH2M, 2/9/2023



Parcel UC-3 Photograph 5: Asphalt pavement cover southeast of Building 815 located between Parcel UC-1 and Parcel E-2. Facing northeast.

Photographed by: Marcella Navas/CH2M, 2/9/2023



Parcel UC-3 Photograph 6: Street along Crisp Road. Facing northwest.

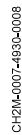
Photographed by: Marcella Navas/CH2M, 2/9/2023



Parcel UC-3 Photograph 7: Asphalt pavement cover between Parcel UC-3 and UC-1.
Facing south.

Photographed by: Marcella Navas/CH2M, 2/9/2023

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Appendix D

Public Notice

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NTSB probes SFO-bound flight from Maui that dove toward ocean

By Rachel Swan

A United Airlines flight bound for San Francisco plunged to within 775 feet of the ocean shortly after taking off on Dec. 18, according to flight track data posted by FlightRadar24. The data shows a sudden nosedive about 71 seconds after the plane departed from Kahului Airport on Maui, Hawaii. Before plummeting, the Boeing 777 had reached an altitude of 2,300 feet.

Despite the harrowing incident, Flight UA122 landed safely

at San Francisco International Airport, where the pilots filed a safety report, spokespeople for United Airlines said in a statement.

"United then closely coordinated with the Federal Aviation Administration and (the Air Line Pilots Association) on an investigation that ultimately resulted in the pilots receiving additional training," the statement read.

The National Transportation Safety Board said Tuesday it was investigating the nose-dive incident.

The two pilots, who have 25,000 hours of flight experience between them, cooperated with the probe, the statement said. It did not explain the circumstances that led to the abrupt descent, nor did it specify whether the flight contained passengers or cargo.

"Safety remains our highest priority," the statement concluded. A spokesperson for San Francisco International Airport declined to comment.

Reach Rachel Swan: rswan@sfgate.com.



A United Airlines Boeing 777, like this one at SFO, took a terrifying nosedive toward the Pacific Ocean last December.

KNIGHT

From page A1

and a loaded gun that had been reported stolen fell from his waistband. That same day, police arrested a 19-year-old man for alleged battery against his girlfriend on the platform of the Powell St. Station.

Since 2007, BART has received 509 reports of domestic violence on its trains or in its stations including assault against a partner, spouse or child, and abandoning or neglecting children. Since 2005, the agency has banned more than 300 abusers from riding its trains.

To its credit, the agency isn't trying to hide these grim statistics. In fact, its spokesperson, Alicia Frost, offered them up to me, noting BART is a frequent meeting point for parents who've split up to hand off their children, fueling some of the violence.

Also to its credit, the agency — which has so much to focus on, including its own solvency as ridership remains lackluster due to the pandemic — is trying to do something about it even if publicizing violence isn't exactly great for the bottom line.

"This is what prevents transit agencies from talking about difficult things," Frost told me. "They're so afraid you're reminding people it happens. We've decided not to let that stop us from talking about it."

To that end, passengers will notice new public art that's impossible to ignore throughout BART stations and trains this week. They're gorgeous, brightly colored, sometimes giant images depicting family and friends alongside messages including "Love Shouldn't Hurt," "Be the Friend Who Brings It Up" and "We All Deserve Respect."

The campaign is the brainchild of the Asian Women's Shelter, which received a \$50,000 grant from the AAPI Civic Engagement Fund to spread awareness about domestic violence prevention throughout public transit stations and wisely tapped famed New York City artist Amanda Phingbodhipakkiya to create the work.

Hundreds of posters and digital ads will blanket all four downtown San Francisco stations as well as to others around the bay and the train and themselves, all space given free by BART. Another grant from the Asian Pacific Fund, as well as private donations, will fund the art's placement in Muni shelters and billboards around the city.

Each piece has a QR code that directs viewers to the website, www.letsstalkaboutus.org, with a message about the importance of having difficult conversations with friends and family about domestic violence, and resources for getting help.

Saara Ahmed, community resource coordinator for the Asian Women's Shelter, said the idea is to get people talking about the problem and thinking of what they can do to prevent it.

"These issues can feel really overwhelming and scary and daunting — or something that's really far away and distant," she said. "Like, 'That's not an issue for us.' Having folks reflect on the fact that these things are happening every day in our community, but there's also things we can do every day about them, that's the invitation."

Orchid Pusey, executive director of the Asian Women's Shelter, said it's important to question behaviors that get passed down from one generation to the next and to not be afraid to start tough conversations.

Why do some kids feel comfortable treating their mom in a rude, angry way that they'd never treat their dad? Why do some kids get punished for that behavior and others don't? Why do communities rail at outsiders causing harm to their members, but stay quiet when the harm is caused from within?

"There's a lot of gender in it," she said. "And it can be changed."

Phingbodhipakkiya, 34, spent a lot of time in the Bay Area over the past several months talking to victims of domestic violence and crafting her messages and art. She's the daughter of Asian immigrants herself: a Thai dad and Indonesian mom who met in an Atlanta cafe where he was a busboy and she was a business student poring over her books.

"I look at my work as invoking joy and belonging in the face of grief and injustice," she told me. "The reason why I focus so deeply on belonging is it's something that I so rarely felt as a young Asian girl."

She said she loves creating art in the public sphere because it's accessible to anybody — and you can't opt to not see it.

"It's impossible to ignore, which means the truth that I'm speaking through my art is impossible to ignore," she said. "Domestic violence is a topic that's often pushed to the edges of our society. We often only hear whispers about it. I love that we're openly inviting people to join us in fostering healthy, nurturing relationships."

She said she hopes Asian immigrants in particular benefit from her art because they often neglect their own mental health as they work hard to support their families in an unfamiliar place where they

might not speak the language.

Recent public art campaigns by Phingbodhipakkiya in New York City, including prominent displays in Times Square, used similar imagery to highlight the importance of standing up to anti-Asian hate, celebrating Asian resilience and defending the Big Apple overall as it weathered the pandemic. "I Still Believe in Our City," one campaign read. (Note to San Francisco leaders: How about a public art campaign sticking up for our city?)

Trost, the BART spokesperson, said the agency hears frequently about gender-based violence and harassment on BART.

The agency in 2021

launched the Not One More Girl campaign to emphasize what to do if you're the victim of sketchy behavior or violence on BART — or if you witness it. (My favorite tip Trost shared for bystanders is ignoring the perpetrator and starting an unrelated conversation with the victim like pretending to know her or asking to sit with her.) Trost said surveys show women and girls felt safer riding transit just knowing the campaign existed.

"Sexual harassment is prevalent on all transit, and we're showing the model for the country," Trost said, noting BART is getting calls from agencies around the U.S. wanting to replicate the campaign.

She said partnering with Phingbodhipakkiya and the Asian Women's Shelter is a natural next chapter in the campaign. At first blush, it might seem counterintuitive to advertise the sexual harassment and violence that occurs on BART, but Trost said the agency and other public transit agencies ignored it for far too long.

"We think everybody already knows it's happening, and talking about it shows we care deeply about it," she told me. "It's better than doing nothing, which is what BART was doing for many years. We'd like to flip that script."

Reach Heather Knight: hknight@sfgate.com; Twitter: @bhknightsf

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PUBLIC NOTICES	PUBLIC NOTICES	PUBLIC NOTICES
<p>THE SAN FRANCISCO UTILITY AND AGING COMMISSION and its Advisory Council will hold two public hearings to solicit comments and present information on the Area Plan 2023-24. The first hearing is on Wednesday, March 13, 2024 at 10:00 am (1050 California Street, 10th Floor Conference Room) and on Wednesday, March 20, 2024 at 10:00 am (1050 California Street, 10th Floor Conference Room). For more information, please contact Ron Dubois by phone at (415) 375-5052 or email at Ron.Dubois@sfgov.org.</p>	<p>San Francisco Chronicle Local news at your fingertips Available on iOS and Android</p>	<p>SFCHRONICLE.COM/MOBILE-APPS</p>

PUBLIC NOTICE

Hunters Point Naval Shipyards

Notice of Fifth Five-Year Review

The Navy, as the lead agency, is currently conducting the Fifth Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) Five-Year Review for Hunters Point Naval Shipyards (HPNS) in San Francisco, California. HPNS was a naval shipyard operating from 1859 to 1974. The Navy is conducting the Five-Year Review in accordance with the requirements of CERCLA Section 121 (c).

The purpose of the Fifth Five-Year Review is to determine whether the remedies implemented in accordance with the Final Record of Decision and Post-Record of Decision Documents for the following Sites remain protective of human health and the environment:

<ul style="list-style-type: none"> • Installation Remediation (IR) • Sites 7 and 18 • Parcel B-1 • Parcel B-2 • Parcel C • Parcel D-1 • Parcel D-2 	<ul style="list-style-type: none"> • Parcel E • Parcel E-2 • Parcel F • (Final ROD pending) • Parcel UC-1 • Parcel UC-2 • Parcel UC-3
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The remedies were implemented to address chemicals of concern, including metals, volatile organic compounds, semi-volatile organic compounds, pesticides, polychlorinated biphenyls, and radionuclides in soil, sediment, soil gas, and/or groundwater that pose potentially unacceptable risk to human health and the environment. The remedies include soil removal, covers over surface soil and shoreline sediment, groundwater treatment and/or monitoring, soil vapor extraction and monitoring, and institutional controls. The review provides an update of the status of remedial actions implemented since the Fourth Five-Year Review completed in 2019 and assesses progress made on the recommendations in the Fourth Five-Year Review.

A draft of the Fifth Five-Year Review will be made available for public comment; instructions will be provided in a future public notice on the HPNS public website. Following the public comment period, the Navy will issue a public notice when the Five-Year Review has been finalized, anticipated December 2023.

For information about the Fifth Five-Year Review or any environmental cleanup activities at HPNS please visit the HPNS Public Website: <https://go.usa.gov/4tqEES> or contact the following:

Brooks Pauly/Navy
Remedial Project Manager
33000 Nixes Way, Building 50
San Diego, CA 92147
(619) 524-5086
brooks.pauly@navy.mil

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Appendix E

Groundwater Monitoring Summary (DCNs: TRBW-0202-4996-0013; TRBW-0202-4996-0018; TRBW-0202-4996-0022)

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Table 5
Analytical Results Exceeding Project Action Limits
January through December 2019
Hunters Point Naval Shipyard, San Francisco, California

Well ID	Analyte	Project Action Limit (µg/L)	Active Treatment Criteria (µg/L)	1Q/2Q 2019 Result (µg/L)	3Q/4Q 2019 Result (µg/L)
IR Site 07/18					
No Exceedances in IR Site 07/18					
Parcel B-1					
IR10MW13A1	VINYL CHLORIDE	0.5	NA	--	3.1
IR10MW61A	VINYL CHLORIDE	0.5	NA	3.2	4.3
IR10MW63A	VINYL CHLORIDE	0.5	NA	--	1.4
IR10MW71A	VINYL CHLORIDE	0.5	NA	9	19
IR20MW17A	VINYL CHLORIDE	0.5	NA	1.2	0.96
Parcel B-2					
IR26MW49A	MERCURY	0.6	NA	1.01	3.45
Parcel C (RU-C1)					
IR28MW557A	1,1-DICHLOROETHANE	6.5	NA	14 J	13
IR28MW916A	1,1-DICHLOROETHANE	6.5	NA	--	17
IR28MW557A	1,2,4-TRIMETHYLBENZENE	25	NA	700	590
IR28MW934A	1,2,4-TRIMETHYLBENZENE	25	NA	70	--
IR28MW557A	1,2-DICHLOROETHENE (TOTAL)	210	2,100	16,000	14,000
IR28MW557A	1,3,5-TRIMETHYLBENZENE	19	NA	180 J	170
IR28MW934A	1,3,5-TRIMETHYLBENZENE	19	NA	21	--
IR28MW128A	BENZENE	0.5	5	--	1.9
IR28MW338A	BENZENE	0.5	5	0.67	--
IR28MW556A	BENZENE	0.5	5	0.74	--
IR28MW127A	BENZENE	0.5	5	0.51	--
IR28MW557A	BENZENE	0.5	5	19	17
IR28MW916A	BENZENE	0.5	5	--	1.9
IR28MW934A	BENZENE	0.5	5	3.8	3.4 J
IR28MW354A	CHLOROFORM	0.7	7	1.4	--
IR28MW557A	CIS-1,2-DICHLOROETHENE	210	NA	16,000	14,000
IR28MW557A	ISOPROPYLBENZENE	7.8	NA	36 J	30
IR28MW557A	NAPHTHALENE	3.6	NA	190 J	120
IR28MW934A	NAPHTHALENE	3.6	NA	12	15 J
IR28MW338A	TETRACHLOROETHENE	0.54	5.4	15	--
PA28MW52A	TETRACHLOROETHENE	0.54	5.4	2.5	--
IR28MW557A	TETRACHLOROETHENE	0.54	5.4	3.2	--
IR28MW354A	TRICHLOROETHENE	2.9	29	3.5	--
IR28MW557A	TRICHLOROETHENE	2.9	29	49 J	12
IR28MW338A	VINYL CHLORIDE	0.5	25	6.9	--
IR28MW354A	VINYL CHLORIDE	0.5	25	--	11
IR28MW556A	VINYL CHLORIDE	0.5	25	2.3	0.8
IR28MW475A	VINYL CHLORIDE	0.5	25	20	1.6
IR28MW557A	VINYL CHLORIDE	0.5	25	4,300	5,700
IR28MW916A	VINYL CHLORIDE	0.5	25	--	120
IR28MW931A	VINYL CHLORIDE	0.5	25	52	6.9
IR28MW934A	VINYL CHLORIDE	0.5	25	390	180
Parcel C (RU-C2)					
RUC2MW1A	1,2-DICHLOROETHENE (TOTAL)	210	2,100	630	--
IR28MW910A	1,4-DICHLOROBENZENE	2.1	21	3.9	6.7
IR58MW31A	1,4-DICHLOROBENZENE	2.1	21	9.1	5.7

DCN: TRBW-0202-4996-0013

Table 5
Analytical Results Exceeding Project Action Limits
January through December 2019
Hunters Point Naval Shipyard, San Francisco, California

Well ID	Analyte	Project Action Limit (µg/L)	Active Treatment Criteria (µg/L)	1Q/2Q 2019 Result (µg/L)	3Q/4Q 2019 Result (µg/L)
RUC2MW1A	1,4-DICHLOROBENZENE	2.1	21	25	8.8
RUC2MW13A	1,4-DICHLOROBENZENE	2.1	21	--	2.7
IR58MW31A	BENZENE	0.5	5	37	7.7
RUC2MW15B	BENZENE	0.5	5	0.74	0.7
RUC2MW1A	BENZENE	0.5	5	0.74	1
RUC2MW13A	CARBON TETRACHLORIDE	0.5	5	1.8	0.67
RUC2MW08B	CARBON TETRACHLORIDE	0.5	5	0.67	14
RUC2MW11A	CARBON TETRACHLORIDE	0.5	5	3.5	--
RUC2MW11B	CARBON TETRACHLORIDE	0.5	5	--	4.8
IR28MW190F	CARBON TETRACHLORIDE	0.5	5	42	--
IR58MW31A	CHLOROBENZENE	390	3,900	1,500	430
RUC2MW13A	CHLOROFORM	0.7	7	1.3	0.8
RUC2MW15B	CHLOROFORM	0.7	7	1.3	1.5
RUC2MW16B	CHLOROFORM	0.7	7	NS	8.3
RUC2MW2B	CHLOROFORM	0.7	7	0.84	0.99
RUC2MW08B	CHLOROFORM	0.7	7	19	18
RUC2MW09B	CHLOROFORM	0.7	7	--	1.5
RUC2MW11A	CHLOROFORM	0.7	7	1.1	--
RUC2MW11B	CHLOROFORM	0.7	7	--	1.3
IR28MW190F	CHLOROFORM	0.7	7	38	--
RUC2MW1A	CIS-1,2-DICHLOROETHENE	210	NA	600	--
RUC2MW13A	TETRACHLOROETHENE	0.54	5.4	0.55	--
RUC2MW15B	TETRACHLOROETHENE	0.54	5.4	110	70
RUC2MW16B	TETRACHLOROETHENE	0.54	5.4	NS	1.8
RUC2MW1A	TETRACHLOROETHENE	0.54	5.4	1.8	--
RUC2MW1B	TETRACHLOROETHENE	0.54	5.4	8.8	61
RUC2MW2B	TETRACHLOROETHENE	0.54	5.4	18	23
RUC2MW4B	TETRACHLOROETHENE	0.54	5.4	--	23
RUC2MW5B	TETRACHLOROETHENE	0.54	5.4	9.9	21
RUC2MW1B	TPH-TOTAL	20000	NA	24,400 C	32,000 C
RUC2MW4A	TPH-TOTAL	20000	NA	30,000 C	31,000 C
RUC2MW15B	TRICHLOROETHENE	2.9	29	10	36
RUC2MW1A	TRICHLOROETHENE	2.9	29	9	--
IR58MW31A	VINYL CHLORIDE	0.5	25	0.59	--
RUC2MW15B	VINYL CHLORIDE	0.5	25	5.1	36 J
RUC2MW1A	VINYL CHLORIDE	0.5	25	67	20
Parcel C (RU-C4)					
IR28MW407	1,2-DICHLOROETHANE	2.3	115	--	6
IR28MW407	1,4-DICHLOROBENZENE	2.1	21	--	4.3
IR28MW211F	BENZENE	0.5	5	0.58	0.8
IR28MW405	BENZENE	0.5	5	0.73	--
IR28MW407	BENZENE	0.5	5	--	2.2
IR28MW272F	CARBON TETRACHLORIDE	0.5	5	0.51	0.51
IR28MW276A	CARBON TETRACHLORIDE	0.5	5	1.3	2.3
IR28MW272A	CHLOROFORM	0.7	7	0.92	--
IR28MW272F	CHLOROFORM	0.7	7	0.99	0.94
IR28MW276A	CHLOROFORM	0.7	7	--	0.77

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Table 5
Analytical Results Exceeding Project Action Limits
January through December 2019
Hunters Point Naval Shipyard, San Francisco, California

Well ID	Analyte	Project Action Limit (µg/L)	Active Treatment Criteria (µg/L)	1Q/2Q 2019 Result (µg/L)	3Q/4Q 2019 Result (µg/L)
IR28MW272A	TRICHLOROETHENE	2.9	29	13	--
IR28MW272F	TRICHLOROETHENE	2.9	29	180	120
IR28MW276A	TRICHLOROETHENE	2.9	29	5.9	4.4
IR28MW277A	TRICHLOROETHENE	2.9	29	5.2	--
IR28MW355F	TRICHLOROETHENE	2.9	29	4.5	--
IR28MW566A	TRICHLOROETHENE	2.9	29	3.2	--
IR28MW211F	VINYL CHLORIDE	0.5	25	3.7	11
IR28MW355F	VINYL CHLORIDE	0.5	25	--	1.7
IR28MW405	VINYL CHLORIDE	0.5	25	--	13
IR28MW407	VINYL CHLORIDE	0.5	25	--	86
IR28MW566A	VINYL CHLORIDE	0.5	25	--	0.8
Parcel C (RU-C5)					
IR06MW67A	1,1-DICHLOROETHANE	6.5	NA	25	12
IR06MW67A	1,2-DICHLOROETHENE (TOTAL)	210	2,100	1,200	--
IR25MW11A	1,4-DICHLOROBENZENE	2.1	21	8.2	8.9
IR25MW64A	1,4-DICHLOROBENZENE	2.1	21	12	17
IR25MW65B	1,4-DICHLOROBENZENE	5	21	10	19
IR25MW68A	1,4-DICHLOROBENZENE	2.1	21	--	2.9
IR06MW67A	BENZENE	0.5	5	2	2.6
IR25MW74A	BENZENE	0.5	5	9.2	5.2
IR25MW11A	BENZENE	0.5	5	1.2	0.73
IR25MW16A	BENZENE	0.5	5	--	1
IR25MW64A	BENZENE	0.5	5	13	21
IR25MW65B	BENZENE	1	5	54	57
IR25MW68A	BENZENE	0.5	5	--	0.96
IR25MW64A	CHLOROBENZENE	390	3,900	510	480
IR25MW65B	CHLOROBENZENE	70	3,900	3,600	1,800
IR06MW67A	CIS-1,2-DICHLOROETHENE	210	NA	1,200	--
IR06MW42A	NAPHTHALENE	4	NA	120	23
IR25MW65B	NAPHTHALENE	0.093	NA	24	44
IR06MW46A	TETRACHLOROETHENE	0.54	5.4	--	4.2
IR06MW67A	TETRACHLOROETHENE	0.54	5.4	15	9.5
IR25MW68A	TETRACHLOROETHENE	0.54	5.4	1.4	--
IR25MW72A	TETRACHLOROETHENE	0.54	5.4	0.84	--
IR06MW67A	TRICHLOROETHENE	2.9	29	200	12
IR06MW22A	VINYL CHLORIDE	0.5	25	2.1	5.1
IR06MW32A	VINYL CHLORIDE	0.5	25	0.95	2.4
IR06MW40A	VINYL CHLORIDE	0.5	25	1.3	2.2
IR06MW59A1	VINYL CHLORIDE	0.5	25	--	1.3
IR06MW67A	VINYL CHLORIDE	0.5	25	380	460
IR25MW16A	VINYL CHLORIDE	0.5	25	--	2.1
IR25MW64A	VINYL CHLORIDE	0.5	25	--	3.8
IR25MW68A	VINYL CHLORIDE	0.5	25	--	0.53
IR25MW74A	VINYL CHLORIDE	0.5	25	0.74	--
Parcel D-1					
No Exceedances in Parcel D-1					
Parcel E⁽¹⁾					

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Table 5
Analytical Results Exceeding Project Action Limits
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Hunters Point Naval Shipyard, San Francisco, California

Well ID	Analyte	Project Action Limit (µg/L)	Active Treatment Criteria (µg/L)	1Q/2Q 2019 Result (µg/L)	3Q/4Q 2019 Result (µg/L)
IR03MW218A2	NAPHTHALENE	63	NA	22	NS
IR03MW218A2	TPH-TOTAL	3216	NA	7,180	NS
IR03MW342A	TPH-TOTAL	4839	NA	6,400	NS
IR36MW237A	VINYL CHLORIDE	6.3	NA	45	NS
IR02MW373A	ZINC	81	NA	1,280	NS
Parcel E-2					
IR01MWI-9R	ARSENIC	10	NA	--	14.1
IR01MW38A	CYANIDE	10	NA	--	12.2
IR01MW62A	CYANIDE	10	NA	20	29.7
IR01MW63A	CYANIDE	10	NA	23	26.8
IR01MW60A	TPH-TOTAL	4839	NA	7,600 C	10,200 C
IR01MW64A	TPH-TOTAL	4839	NA	7,911 C	7,100 C
IR01MW66A	TPH-TOTAL	4,839	NA	--	5,400 C
IR01MWI-7R	TPH-TOTAL	1,467	NA	NS	3,200 C
IR01MWI-9R	TPH-TOTAL	2,092	NA	NS	3,000 C
IR01MW38A	UN-IONIZED AMMONIA(1)	25	NA	99 C	170 C
IR01MW48A	UN-IONIZED AMMONIA(1)	25	NA	63 C	491 C
IR01MW60A	UN-IONIZED AMMONIA(1)	25	NA	--	27 C
IR01MWI-9R	UN-IONIZED AMMONIA(1)	25	NA	NS	419 C
Parcel G					
IR33MW64A	CARBON TETRACHLORIDE	0.5	NA	1	--
IR33MW64A	CHLOROFORM	1	NA	8.1	--
IR71MW03A	TETRACHLOROETHENE	0.54	NA	1.3 J	1.8
Parcel UC-2					
IR06MW54F	CARBON TETRACHLORIDE	0.5	NA	4	1.6
IR06MW55F	CARBON TETRACHLORIDE	0.5	NA	0.84	--
IR06MW54F	CHLOROFORM	1	NA	1.6	1.2

Notes/Abbreviations:

(1) Parcel E is sampled annually during 1Q2Q 2019

Grey box = concentration exceeded both the Project Action Limit and the Active Treatment Criteria

-- = did not exceed the PAL during sampling event

µg/L = micrograms per liter

C = Calculated

J = estimated

NA = Active Treatment Criteria values are only used for Parcel C Remedial Action and are not applicable for other Parcels

NS = not sampled

IR = Installation Restoration

1Q2Q = first quarter/second quarter

3Q/4Q = third quarter/fourth quarter

Table 5
Analytical Results Exceeding Project Action Limits and Active Treatment Criteria
January through December 2020
Hunters Point Naval Shipyard, San Francisco, California

Well ID	Analyte	Project Action Limit (µg/L)	Active Treatment Criteria (µg/L)	1Q/2Q 2020 Result (µg/L)	3Q/4Q 2020 Result (µg/L)
IR Site 07/18					
No Exceedances in IR 07/18					
Parcel B-1					
IR10MW59A	VINYL CHLORIDE	0.5	NA	--	2.3
IR10MW61A	VINYL CHLORIDE	0.5	NA	3.9	4.4
IR10MW63A	VINYL CHLORIDE	0.5	NA	1.3	1.5
IR10MW71A	VINYL CHLORIDE	0.5	NA	16	21
IR20MW17A	VINYL CHLORIDE	0.5	NA	0.92	1.1
Parcel B-2					
IR26MW49A	MERCURY	0.6	NA	--	2.38
IR26MW71A	MERCURY	0.6	NA	1.72	1.47
PA50MW02A	MERCURY	0.6	NA	--	0.829
Parcel C (RU-C1)					
Plume C1-1					
IR28MW338A	TETRACHLOROETHENE	0.54	5.4	1	--
IR28MW338A	VINYL CHLORIDE	0.5	25	26	21
IR28MW556A	BENZENE	0.5	5	1.2	0.79
IR28MW556A	VINYL CHLORIDE	0.5	25	2.1	0.85
PA28MW50A	BENZENE	0.5	5	--	0.73
PA28MW50A	VINYL CHLORIDE	0.5	25	--	1.1
Plume C1-2					
PA28MW52A	TETRACHLOROETHENE	0.54	5.4	--	0.61
IR28MW127A	BENZENE	0.5	5	0.62	--
Plume C1-3					
IR28MW128A	BENZENE	0.5	5	1.4	2.2
IR28MW354A	TRICHLOROETHENE	2.9	29	3.1	3.3
IR28MW354A	VINYL CHLORIDE	0.5	25	4.1	2.5
IR28MW475A	BENZENE	0.5	5	0.79	--
IR28MW475A	VINYL CHLORIDE	0.5	25	21	3.2
IR28MW475A	ZINC	81	NA	155	--
IR28MW557A	1,1-DICHLOROETHANE	6.5	NA	14 J	11
IR28MW557A	1,2,4-TRIMETHYLBENZENE	25	NA	690	580
IR28MW557A	1,2-DICHLOROETHENE (TOTAL)	210	2100	13,000	11,000
IR28MW557A	1,3,5-TRIMETHYLBENZENE	19	NA	180	160
IR28MW557A	BENZENE	0.5	5	19 J	14
IR28MW557A	CIS-1,2-DICHLOROETHENE	210	NA	13,000	11,000
IR28MW557A	ISOPROPYLBENZENE	7.8	NA	35 J	27
IR28MW557A	NAPHTHALENE	3.6	NA	170	130
IR28MW557A	TETRACHLOROETHENE	0.54	5.4	0.62 J	--
IR28MW557A	TRICHLOROETHENE	2.9	29	21 J	10
IR28MW557A	VINYL CHLORIDE	0.5	25	6,400	4,600
IR28MW916A	1,1-DICHLOROETHANE	6.5	NA	11	12
IR28MW916A	BENZENE	0.5	5	1.3	1.3
IR28MW916A	VINYL CHLORIDE	0.5	25	42	0.75
IR28MW931A	BENZENE	0.5	5	--	0.52
IR28MW931A	VINYL CHLORIDE	0.5	25	3.4	6.5
IR28MW934A	BENZENE	0.5	5	1.7	2.1
IR28MW934A	VINYL CHLORIDE	0.5	25	89	54
IR28MW934A	HEXAVALENT CHROMIUM	50	50	202	--

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Table 5
Analytical Results Exceeding Project Action Limits and Active Treatment Criteria
January through December 2020
Hunters Point Naval Shipyard, San Francisco, California

Well ID	Analyte	Project Action Limit (µg/L)	Active Treatment Criteria (µg/L)	1Q/2Q 2020 Result (µg/L)	3Q/4Q 2020 Result (µg/L)
Plume C1-4					
No Exceedances in Plume C1-4					
Parcel C (RU-C2)					
Plume C2-1					
IR28MW910A	TETRACHLOROETHENE	0.54	5.4	--	2.3
IR58MW31A	1,4-DICHLOROBENZENE	2.1	21	4.6	3.3
IR58MW31A	BENZENE	0.5	5	6.7	5.2
IR58MW31A	CHLOROBENZENE	390	3,900	480	--
RUC2MW15B	TETRACHLOROETHENE	0.54	5.4	9.3	--
RUC2MW15B	TRICHLOROETHENE	2.9	29	15	--
RUC2MW15B	VINYL CHLORIDE	0.5	25	0.61	--
RUC2MW16B	TETRACHLOROETHENE	0.54	5.4	0.87	--
RUC2MW1A	1,4-DICHLOROBENZENE	2.1	21	4.3	8.5
RUC2MW1A	BENZENE	0.5	5	1.1	2.9
RUC2MW1A	TRICHLOROETHENE	2.9	29	--	5.3
RUC2MW1A	VINYL CHLORIDE	0.5	25	3.6	7.2
RUC2MW1B	TETRACHLOROETHENE	0.54	5.4	56	--
RUC2MW2B	CHLOROFORM	0.7	7	0.94	--
RUC2MW2B	TETRACHLOROETHENE	0.54	5.4	21	--
RUC2MW4B	TETRACHLOROETHENE	0.54	5.4	8.6	--
RUC2MW5B	TETRACHLOROETHENE	0.54	5.4	20	--
Plume C2-2					
RUC2MW08A	TETRACHLOROETHENE	0.54	5.4	--	0.76
RUC2MW08B	CARBON TETRACHLORIDE	0.5	5	17	--
RUC2MW08B	CHLOROFORM	0.7	7	19	--
RUC2MW11A	CARBON TETRACHLORIDE	0.5	5	4.1	--
RUC2MW11A	CHLOROFORM	0.7	7	1.0	--
RUC2MW11A	TETRACHLOROETHENE	0.54	5.4	--	11
Plume C2-3					
IR28MW300F	BENZENE	0.5	5	0.51	0.86
IR28MW939F	BENZENE	0.5	5	1.0	0.76
IR28MW940F	CARBON TETRACHLORIDE	0.5	5	30	29 J
IR28MW940F	CHLOROFORM	0.7	7	9.1	12
IR28MW941F	1,4-DICHLOROBENZENE	2.1	21	11	13
IR28MW941F	BENZENE	0.5	5	3.1	3.8
IR28MW941F	CHLOROFORM	0.7	7	0.80	0.83
IR28MW941F	TRICHLOROETHENE	2.9	29	12	5.1
IR28MW941F	VINYL CHLORIDE	0.5	25	93	140
Parcel C (RU-C4)					
Plume C4-1					
IR28MW200A	TRICHLOROETHENE	2.9	29	--	6.0
IR28MW211F	BENZENE	0.5	5	0.87	1.2
IR28MW211F	VINYL CHLORIDE	0.5	25	10	13
IR28MW216F	TRICHLOROETHENE	2.9	29	--	3.6
IR28MW216F	VINYL CHLORIDE	0.5	25	--	0.62
IR28MW272F	CARBON TETRACHLORIDE	0.5	5	0.60	0.51
IR28MW272F	CHLOROFORM	0.7	7	1.0	1.0
IR28MW272F	TRICHLOROETHENE	2.9	29	150	78
IR28MW276A	TRICHLOROETHENE	2.9	29	6.3	7.3

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Table 5
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Hunters Point Naval Shipyard, San Francisco, California

Well ID	Analyte	Project Action Limit (µg/L)	Active Treatment Criteria (µg/L)	1Q/2Q 2020 Result (µg/L)	3Q/4Q 2020 Result (µg/L)
IR28MW405	TRICHLOROETHENE	2.9	29	9.7	3.1
IR28MW405	VINYL CHLORIDE	0.5	25	--	15
IR28MW407	1,2-DICHLOROETHANE	2.3	115	6.7	4.6
IR28MW407	1,4-DICHLOROBENZENE	2.1	21	3.9	4.7
IR28MW407	BENZENE	0.5	5	1.7	2.9
IR28MW407	VINYL CHLORIDE	0.5	25	67	72
IR28MW566A	VINYL CHLORIDE	0.5	25	0.58	1.1
Parcel C (RU-C5)					
Plume C5-1					
IR06MW22A	VINYL CHLORIDE	0.5	25	0.96	18
IR06MW32A	VINYL CHLORIDE	0.5	25	4.1	2.0
IR06MW40A	VINYL CHLORIDE	0.5	25	1.6	1.4
IR06MW59A1	BENZENE	0.5	5	1.6	1.3
IR06MW59A1	TETRACHLOROETHENE	0.54	5.4	1.2	0.90
IR06MW59A1	TRICHLOROETHENE	2.9	29	8.8	5.6
IR06MW59A1	VINYL CHLORIDE	0.5	25	29	20
IR06MW67A	1,1-DICHLOROETHANE	6.5	NA	22	23
IR06MW67A	1,2-DICHLOROETHENE (TOTAL)	210	NA	320	--
IR06MW67A	BENZENE	0.5	5	3.1	3.7
IR06MW67A	CIS-1,2-DICHLOROETHENE	210	NA	320	--
IR06MW67A	TETRACHLOROETHENE	0.54	5.4	13	15
IR06MW67A	TRICHLOROETHENE	2.9	29	69	33
IR06MW67A	VINYL CHLORIDE	0.5	25	520	670
Plume C5-2					
No Exceedances in Plume C5-2					
Plume C5-3					
IR06MW42A	NAPHTHALENE	3.6	NA	7.4	120
Plume C5-4					
IR25MW16A	BENZENE	0.5	5	2.8	2.8
IR25MW16A	VINYL CHLORIDE	0.5	25	1.2	0.52
IR25MW73A	VINYL CHLORIDE	0.5	25	0.61	0.75
IR25MW74A	BENZENE	0.5	5	4.4	4.7
Plume C5-5					
IR25MW11A	1,4-DICHLOROBENZENE	2.1	21	7.5	8.3
IR25MW11A	BENZENE	0.5	5	--	0.62
IR25MW64A	1,4-DICHLOROBENZENE	2.1	21	23	28
IR25MW64A	BENZENE	0.5	5	20	64
IR25MW64A	CHLOROBENZENE	390	3,900	770	1,700
IR25MW64A	VINYL CHLORIDE	0.5	25	2.6	2.1
IR25MW65B	1,4-DICHLOROBENZENE	5	21	15	18
IR25MW65B	BENZENE	1	5	62	80
IR25MW65B	CHLOROBENZENE	70	3,900	4,000	4,200
IR25MW65B	IRON	10,950	NA	--	12,300
IR25MW65B	NAPHTHALENE	0.093	NA	35	36
IR25MW68A	1,4-DICHLOROBENZENE	2.1	21	4.7	3.9
IR25MW68A	BENZENE	0.5	5	1.9	0.51
IR25MW68A	VINYL CHLORIDE	0.5	25	1.2	--
IR25MW72A	1,4-DICHLOROBENZENE	2.1	21	--	3.4
IR25MW72A	TETRACHLOROETHENE	0.54	5.4	--	0.61

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Table 5
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Hunters Point Naval Shipyard, San Francisco, California

Well ID	Analyte	Project Action Limit (µg/L)	Active Treatment Criteria (µg/L)	1Q/2Q 2020 Result (µg/L)	3Q/4Q 2020 Result (µg/L)
Parcel D-1					
No Exceedances in Parcel D-1					
Parcel E					
IR02MW373A	NICKEL	96.5	NA	287	--
IR02MW373A	ZINC	81	NA	1,950	--
IR03MW218A2	NAPHTHALENE	63	NA	47 J	--
IR03MW218A2	TPH-TOTAL	3,216	NA	24,510 C	--
IR03MW342A	TPH-TOTAL	4,839	NA	9,000 C	--
IR36MW237A	VINYL CHLORIDE	6.3	NA	70	--
Parcel E-2					
IR01MW31A	UN-IONIZED AMMONIA(1)	25	NA	62 C	48 C
IR01MW38A	CYANIDE	10	NA	16.6	15.2
IR01MW38A	UN-IONIZED AMMONIA(1)	25	NA	154 C	172 C
IR01MW48A	CYANIDE	10	NA	14.1	11.7
IR01MW48A	UN-IONIZED AMMONIA(1)	25	NA	134 C	201 C
IR01MW60A	CYANIDE	10	NA	15.4	--
IR01MW60A	TPH-TOTAL	4,839	NA	8,330 C	11,232 C
IR01MW60A	UN-IONIZED AMMONIA(1)	25	NA	29 C	26 C
IR01MW62A	CYANIDE	10	NA	17.8	28.0
IR01MW62A	ZINC	81	NA	88.3	--
IR01MW63A	CYANIDE	10	NA	21.5	18.1
IR01MW64A	TPH-TOTAL	4,839	NA	--	6,393 C
IR01MWI-9R	ARSENIC	10	NA	--	13.2 J
IR01MWI-9R	CYANIDE	10	NA	10.4	12.4
IR01MWI-9R	TPH-TOTAL	2,092	NA	3,500 C	3,300 C
IR01MWI-9R	UN-IONIZED AMMONIA(1)	25	NA	527 C	610 C
Parcel G					
IR33MW64A	CHLOROFORM	1	NA	--	1.3
IR71MW03A	TETRACHLOROETHENE	0.5	NA	1.7	1.1
Parcel UC-2					
IR06MW54FR	CARBON TETRACHLORIDE	0.5	NA	1.8	1.3
IR06MW54FR	CHLOROFORM	1	NA	1.3	1.4

Abbreviations:

µg/L = micrograms per liter

C= Calculated

NA = Active Treatment Criteria values are only used for Parcel C remedial action and are not applicable for other Parcels at Hunters Point Naval Shipyard

J= estimated

IR= Installation Restoration

Grey box = concentration exceeded both the Project Action Limit and the Active Treatment Criteria

Table 5
Analytical Results Exceeding Project Action Limits and Active Treatment Criteria
January through December 2021
Hunters Point Naval Shipyard, San Francisco, California

Well ID	Analyte	Project Action Limit (µg/L)	Active Treatment Criteria (µg/L)	1Q/2Q 2021 Result (µg/L)	3Q/4Q 2021 Result (µg/L)
IR Site 07/18					
No Exceedances in IR 07/18					
Parcel B-1					
IR10MW13A	VINYL CHLORIDE	0.5	NA	--	1.3
IR10MW59A	VINYL CHLORIDE	0.5	NA	--	2.1
IR10MW61A	VINYL CHLORIDE	0.5	NA	3.4	3.3
IR10MW63A	VINYL CHLORIDE	0.5	NA	--	1.2
IR10MW71A	TRICHLOROETHENE	2.9	NA	3.2	--
IR10MW71A	VINYL CHLORIDE	0.5	NA	17	17
IR20MW17A	VINYL CHLORIDE	0.5	NA	1.1	1.3
Parcel B-2					
IR26MW41A	DICHLORODIFLUOROMETHANE	14	NA	--	21
IR26MW49A	MERCURY	0.6	NA	--	3.57
IR26MW71A	MERCURY	0.6	NA	1.26	5
Parcel C (RU-C1)					
Plume C1-1					
IR28MW338A	TETRACHLOROETHENE	0.54	5.4	13	--
IR28MW338A	TRICHLOROETHENE	2.90	29	8.3	--
IR28MW338A	VINYL CHLORIDE	0.5	25	13	31
IR28MW556A	BENZENE	0.5	5	1.2	1.7
IR28MW556A	VINYL CHLORIDE	0.5	25	1.7	2.2
PA28MW50A	BENZENE	0.5	5	0.88	0.66
PA28MW50A	VINYL CHLORIDE	0.5	25	1	0.67
RUC11MW01A	BENZENE	0.5	5	--	0.64
RUC11MW01A	VINYL CHLORIDE	0.5	25	--	4.3
Plume C1-2					
PA28MW52A	TETRACHLOROETHENE	0.54	5.4	3.4	--
Plume C1-3					
IR28MW128A	BENZENE	0.5	5	--	2.2
IR28MW128A	TRICHLOROETHENE	2.90	29	3.9	--
IR28MW354A	TRICHLOROETHENE	2.9	29	11	--
IR28MW354A	VINYL CHLORIDE	0.5	25	1.5	4.1
IR28MW475A	VINYL CHLORIDE	0.5	25	44	7
IR28MW557A	1,1,2,2-TETRACHLOROETHANE	3	NA	--	3 J
IR28MW557A	1,1-DICHLOROETHANE	6.5	NA	9.5	11 J
IR28MW557A	1,2,4-TRIMETHYLBENZENE	25	NA	560	850
IR28MW557A	1,2-DICHLOROETHENE (TOTAL)	210	2,100	6,500	8,900
IR28MW557A	1,3,5-TRIMETHYLBENZENE	19	NA	160	--
IR28MW557A	BENZENE	0.5	5	10	12 J
IR28MW557A	CARBON TETRACHLORIDE	0.5	5	--	11 J
IR28MW557A	CIS-1,2-DICHLOROETHENE	210	NA	6,500	8,800
IR28MW557A	ISOPROPYLBENZENE	7.8	NA	20	25 J
IR28MW557A	NAPHTHALENE	3.6	NA	84 J	130
IR28MW557A	TRICHLOROETHENE	2.9	29	5.2	5.5 J
IR28MW557A	VINYL CHLORIDE	0.5	25	6,300	7,300

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Table 5
Analytical Results Exceeding Project Action Limits and Active Treatment Criteria
January through December 2021
Hunters Point Naval Shipyard, San Francisco, California

Well ID	Analyte	Project Action Limit (µg/L)	Active Treatment Criteria (µg/L)	1Q/2Q 2021 Result (µg/L)	3Q/4Q 2021 Result (µg/L)
Plume C1-3 continued					
IR28MW916A	1,1-DICHLOROETHANE	6.5	NA	11	20
IR28MW916A	BENZENE	0.5	5	1.2	1.7
IR28MW916A	CARBON TETRACHLORIDE	0.5	5	--	20
IR28MW916A	TRICHLOROETHENE	2.9	29	28	--
IR28MW916A	VINYL CHLORIDE	0.5	25	110	0.91
IR28MW931A	BENZENE	0.5	5	--	0.57
IR28MW931A	VINYL CHLORIDE	0.5	25	1.5	14
IR28MW934A	BENZENE	0.5	5	1.7	1.6 J
IR28MW934A	VINYL CHLORIDE	0.5	25	45	40 J
Plume C1-4					
No Exceedances in Plume C1-4					
Parcel C (RU-C2)					
Plume C2-1					
IR28MW910A	TETRACHLOROETHENE	0.54	5.4	--	1.4
IR58MW31A	1,4-DICHLOROBENZENE	2.1	21	4.3	--
IR58MW31A	BENZENE	0.5	5	15	3.3
IR58MW31A	CHLOROBENZENE	390	3,900	1,000	--
RUC2MW1A	1,4-DICHLOROBENZENE	2.1	21	--	5.9
RUC2MW1A	BENZENE	0.5	5	--	2.4
RUC2MW1A	VINYL CHLORIDE	0.5	25	0.84	28
Plume C2-2					
RUC2MW11A	TETRACHLOROETHENE	0.54	5.4	1.1	2
Plume C2-3					
IR28MW300F	BENZENE	0.5	5	0.57	0.68
IR28MW565A	VINYL CHLORIDE	0.5	25	--	1.8
IR28MW939F	BENZENE	0.5	5	0.82	1.1
IR28MW940F	CARBON TETRACHLORIDE	0.5	5	26	40
IR28MW940F	CHLOROFORM	0.7	7	8.8	13
IR28MW941F	1,4-DICHLOROBENZENE	2.1	21	13	17
IR28MW941F	BENZENE	0.5	5	3.2	3.4
IR28MW941F	TRICHLOROETHENE	2.9	29	9.6	14
IR28MW941F	VINYL CHLORIDE	0.5	25	51	50
Parcel C (RU-C4)					
Plume C4-1					
IR28MW200A	TRICHLOROETHENE	2.9	29	6.6	5.5
IR28MW211F	BENZENE	0.5	5	0.91	NS ⁽²⁾
IR28MW211F	VINYL CHLORIDE	0.5	25	9.7	NS ⁽²⁾
IR28MW276A	TRICHLOROETHENE	2.9	29	8.8	NS ⁽²⁾
IR28MW405	TRICHLOROETHENE	2.9	29	12	NS ⁽²⁾
IR28MW407	1,4-DICHLOROBENZENE	2.1	21	3	NS ⁽²⁾
IR28MW407	VINYL CHLORIDE	0.5	25	0.93	NS ⁽²⁾
IR28MW566A	TRICHLOROETHENE	2.9	29	6.1	--
IR28MW566A	VINYL CHLORIDE	0.5	25	2.60	2

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Table 5
Analytical Results Exceeding Project Action Limits and Active Treatment Criteria
January through December 2021
Hunters Point Naval Shipyard, San Francisco, California

Well ID	Analyte	Project Action Limit (µg/L)	Active Treatment Criteria (µg/L)	1Q/2Q 2021 Result (µg/L)	3Q/4Q 2021 Result (µg/L)
Parcel C (RU-C5)					
Plume C5-1					
IR06MW22A	VINYL CHLORIDE	0.5	25	2.1	13
IR06MW32A	VINYL CHLORIDE	0.5	25	3.1	--
IR06MW40A	VINYL CHLORIDE	0.5	25	1.1	2 J
IR06MW46A	TETRACHLOROETHENE	0.54	5.4	3.2	2.9
IR06MW59A1	BENZENE	0.5	5	--	1.2
IR06MW59A1	TETRACHLOROETHENE	0.54	5.4	--	1.2
IR06MW59A1	TRICHLOROETHENE	2.9	29	--	10
IR06MW59A1	VINYL CHLORIDE	0.5	25	--	32
IR06MW67A	1,1-DICHLOROETHANE	6.5	NA	34	32
IR06MW67A	1,2-DICHLOROETHENE (TOTAL)	210	NA	1,500	780
IR06MW67A	BENZENE	0.5	5	3	3.2
IR06MW67A	CIS-1,2-DICHLOROETHENE	210	NA	1,500	780
IR06MW67A	TETRACHLOROETHENE	0.54	5.4	37	13
IR06MW67A	TRICHLOROETHENE	2.9	29	350	92
IR06MW67A	VINYL CHLORIDE	0.5	25	1,100	810
Plume C5-2					
No Exceedances in Plume C5-2					
Plume C5-3					
IR06MW42A	NAPHTHALENE	3.6	NA	17	49
Plume C5-4					
IR25MW16A	BENZENE	0.5	5	1.4	1.1
IR25MW16A	VINYL CHLORIDE	0.5	25	--	0.82
IR25MW73A	VINYL CHLORIDE	0.5	25	0.69	0.60
IR25MW74A	BENZENE	0.5	5	9.4	8.7
IR25MW74A	VINYL CHLORIDE	0.5	25	--	0.83
Plume C5-5					
IR25MW11A	1,4-DICHLOROBENZENE	2.1	21	8.7	NS ⁽²⁾
IR25MW11A	BENZENE	0.5	5	0.72	NS ⁽²⁾
IR25MW64A	1,4-DICHLOROBENZENE	2.1	21	13	NS ⁽²⁾
IR25MW64A	BENZENE	0.5	5	15	NS ⁽²⁾
IR25MW64A	CHLOROBENZENE	390	3,900	690	NS ⁽²⁾
IR25MW64A	VINYL CHLORIDE	0.5	25	0.75	NS ⁽²⁾
IR25MW65B	1,4-DICHLOROBENZENE	5	21	23 J	NS ⁽²⁾
IR25MW65B	BENZENE	1	5	73	NS ⁽²⁾
IR25MW65B	CHLOROBENZENE	70	3,900	5,100	NS ⁽²⁾
IR25MW65B	NAPHTHALENE	0.093	NA	50 J	NS ⁽²⁾
IR25MW65B	IRON	10,950	NA	12,800	NS ⁽²⁾
IR25MW68A	1,4-DICHLOROBENZENE	2.1	21	5	NS ⁽²⁾
IR25MW68A	BENZENE	0.5	5	0.71	NS ⁽²⁾
IR25MW72A	1,4-DICHLOROBENZENE	2.1	21	3.2	--
IR25MW72A	BENZENE	0.5	5	4.3	--
IR25MW72A	CHLOROFORM	0.7	7	--	0.84
IR25MW72A	TETRACHLOROETHENE	0.54	5.4	1.5	1.7
IR25MW72A	VINYL CHLORIDE	0.5	25	0.68	--

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Table 5
Analytical Results Exceeding Project Action Limits and Active Treatment Criteria
January through December 2021
Hunters Point Naval Shipyard, San Francisco, California

Well ID	Analyte	Project Action Limit (µg/L)	Active Treatment Criteria (µg/L)	1Q/2Q 2021 Result (µg/L)	3Q/4Q 2021 Result (µg/L)
<u>Parcel D-1</u>					
No Exceedances in Parcel D-1					
<u>Parcel E</u>					
IR02MW373A	NICKEL	96.5	NA	158	--
IR02MW373A	ZINC	81	NA	776	--
<u>Parcel E-2</u>					
IR01MW38A	UN-IONIZED AMMONIA(1)	25	NA	91 C	170 C
IR01MW38A	CYANIDE	10	NA	--	12.1
IR01MW48A	TPH-TOTAL	25	NA	--	4,900 C
IR01MW48A	UN-IONIZED AMMONIA(1)	25	NA	158 C	--
IR01MW60A	TPH-TOTAL	25	NA	--	10,900 C
IR01MW60A	UN-IONIZED AMMONIA(1)	25	NA	--	28 C
IR01MW62A	CYANIDE	10	NA	35.3	39.7
IR01MW64A	TPH-TOTAL	25	NA	--	10,500 C
IR01MW66A	TPH-TOTAL	25	NA	--	5,100 C
IR01MWI-9R	ARSENIC	10	NA	13.1	12.7
IR01MWI-9R	TPH-TOTAL	2,092	NA	2,900 C	3,500 C
IR01MWI-9R	UN-IONIZED AMMONIA(1)	25	NA	152 C	460 C
IR01MWLF2A	ARSENIC	10	NA	10.8	--
<u>Parcel G</u>					
No Exceedances in Parcel G					
<u>Parcel UC-2</u>					
IR06MW54FR	CARBON TETRACHLORIDE	0.5	NA	2.7	1.7
IR06MW54FR	CHLOROFORM	1	NA	1.2	1.4

Abbreviations:

-- = did not exceed project action limit

BGMP = Basewide Groundwater Monitoring Program

µg/L = micrograms per liter

C = Calculated

NA = Active Treatment Criteria values are only used for Parcel C remedial action and are not applicable for other Parcels at Hunters Point Naval Shipyard

NS = not sampled

J = estimated

IR = Installation Restoration

Grey box = concentration exceeded both the Project Action Limit and the Active Treatment Criteria

(1) = Un-ionized ammonia is a calculated amount using pH, temperature, and ammonia.

(2) = Monitoring well not sampled by the BGMP in September 2021 but was sampled by the remedial action contractor in accordance with the Revised Final Phase II Remedial Action Work Plan (ICI 2020c). The data can be found in a separate summary report.

Table 5
2022 Groundwater Analytical Results
Exceeding Project Action Limits and Active Treatment Criteria
Hunters Point Naval Shipyard, San Francisco, California

Well ID	Analyte	Project Action Limit (µg/L)	Active Treatment Criteria (µg/L)	March 2022 Result (µg/L)	June 2022 Result (µg/L)	September 2022 Result (µg/L)	December 2022 Result (µg/L)
IR Site 07/18							
IR07MW24A	LEAD	14.44	NA	23	NS	--	NS
IR07MW26A	LEAD	14.44	NA	23.9	NS	--	NS
Parcel B-1							
IR10MW59A	VINYL CHLORIDE	0.5	NA	0.60	NS	0.92	NS
IR10MW61A	VINYL CHLORIDE	0.5	NA	0.71	NS	3	NS
IR10MW63A	VINYL CHLORIDE	0.5	NA	--	NS	1.2	NS
IR10MW71A	VINYL CHLORIDE	0.5	NA	9.0	NS	16.0	NS
IR10MW17A	VINYL CHLORIDE	0.5	NA	--	NS	0.87	NS
Parcel B-2							
IR26MW70A	LEAD	14.44	NA	17.7	NS	--	NS
IR26MW49A	MERCURY	0.6	NA	1.79	NS	5.6	NS
IR26MW71A	MERCURY	0.6	NA	1.18	NS	1.75	NS
Parcel C (RU-C1)							
IR28MW557A	1,1-DICHLOROETHANE	6.5	NA	8.7 J	NS	7.6	NS
IR28MW916A	1,1-DICHLOROETHANE	6.5	NA	15	NS	16	NS
IR28MW557A	1,2,4-TRIMETHYLBENZENE	25	NA	560	NS	590	NS
IR28MW557A	1,2-DICHLOROETHENE (TOTAL)	210	2,100	6,000	NS	3,200	NS
IR28MW557A	1,3,5-TRIMETHYLBENZENE	19	NA	170	NS	190	NS
PA28MW50A	BENZENE	0.5	5	0.84	NS	0.8	NS
RUC11MW01A	BENZENE	0.5	5	0.61	NS	0.71	NS
IR28MW127A	BENZENE	0.5	5	0.55	NS	--	NS
IR28MW128A	BENZENE	0.5	5	0.9	NS	4.9	NS
IR28MW475A	BENZENE	0.5	5	0.57	NS	0.55	NS
IR28MW557A	BENZENE	0.5	5	12 J	NS	11	NS
IR28MW556A	BENZENE	0.5	5	--	NS	2	NS
IR28MW916A	BENZENE	0.5	5	1.4	NS	1.4	NS
IR28MW931A	BENZENE	0.5	5	--	NS	0.54	NS
IR28MW934A	BENZENE	0.5	5	2.5 J	NS	0.7	NS
IR28MW557A	CIS-1,2-DICHLOROETHENE	210	NA	6,000	NS	3,100	NS
IR28MW934A	HEXAVALENT CHROMIUM	50	NA	67.5	NS	--	NS
IR28MW557A	ISOPROPYLBENZENE	7.8	NA	30 J	NS	31	NS
IR28MW557A	NAPHTHALENE	3.6	NA	120	NS	110	NS
IR28MW338A	TETRACHLOROETHENE	0.54	5.4	16	NS	--	NS
IR28MW338A	TRICHLOROETHENE	2.9	29	12	NS	--	NS
IR28MW128A	TRICHLOROETHENE	2.9	29	3.9	NS	--	NS
IR28MW354A	TRICHLOROETHENE	2.9	29	14	NS	10	NS
IR28MW557A	TRICHLOROETHENE	2.9	29	11 J	NS	5.3	NS
IR28MW916A	TRICHLOROETHENE	2.9	29	7.6	NS	--	NS
IR28MW338A	VINYL CHLORIDE	0.5	25	8.8	NS	12	NS
IR28MW556A	VINYL CHLORIDE	0.5	25	--	NS	1.1	NS
PA28MW50A	VINYL CHLORIDE	0.5	25	1.2	NS	1.9	NS
RUC11MW01A	VINYL CHLORIDE	0.5	25	5.3	NS	2.2	NS

Table 5
2022 Groundwater Analytical Results
Exceeding Project Action Limits and Active Treatment Criteria
Hunters Point Naval Shipyard, San Francisco, California

Well ID	Analyte	Project Action Limit (µg/L)	Active Treatment Criteria (µg/L)	March 2022 Result (µg/L)	June 2022 Result (µg/L)	September 2022 Result (µg/L)	December 2022 Result (µg/L)
IR28MW354A	VINYL CHLORIDE	0.5	25	--	NS	1.5	NS
IR28MW475A	VINYL CHLORIDE	0.5	25	35	NS	1.1	NS
IR28MW557A	VINYL CHLORIDE	0.5	25	4,200	NS	4,700	NS
IR28MW916A	VINYL CHLORIDE	0.5	25	110	NS	36	NS
IR28MW931A	VINYL CHLORIDE	0.5	25	21	NS	19	NS
IR28MW934A	VINYL CHLORIDE	0.5	25	12 J	NS	40	NS
Parcel C (RU-C2)							
IR28MW910A	1,4-DICHLOROBENZENE	2.1	21	3.1	NS	2.2	NS
IR58MW31A	1,4-DICHLOROBENZENE	2.1	21	4.9	NS	--	NS
RUC2MW1A	1,4-DICHLOROBENZENE	2.1	21	0.53 J	NS	6.1	NS
IR28MW941F	1,4-DICHLOROBENZENE	2.1	21	19	NS	18	NS
IR58MW31A	BENZENE	0.5	5	20	NS	3.8	NS
RUC2MW1A	BENZENE	0.5	5	--	NS	2.8	NS
IR28MW300F	BENZENE	0.5	5	--	NS	0.55	NS
IR28MW910A	BENZENE	0.5	5	7	NS	--	NS
IR28MW939F	BENZENE	0.5	5	--	NS	0.67	NS
IR28MW941F	BENZENE	0.5	5	3.2	NS	3	NS
IR28MW940F	CARBON TETRACHLORIDE	0.5	5	31	NS	35	NS
IR58MW31A	CHLOROBENZENE	390	3900	1,000	NS	--	NS
IR28MW939F	CHLOROFORM	0.7	7	0.77	NS	--	NS
IR28MW940F	CHLOROFORM	0.7	7	9.7	NS	10	NS
RUC2MW11A	TETRACHLOROETHENE	0.54	5.4	0.75	NS	1.4	NS
IR28MW939F	TRICHLOROETHENE	2.9	29	4.6	NS	4.2	NS
IR28MW941F	TRICHLOROETHENE	2.9	29	28	NS	21	NS
RUC2MW1A	VINYL CHLORIDE	0.5	25	0.55	NS	23	NS
IR28MW941F	VINYL CHLORIDE	0.5	25	49	NS	77	NS
Parcel C (RU-C4)							
RUC4MW004A	1,2-DICHLOROETHENE (TOTAL)	210	NA	NS	NS	210	--
RUC4MW005A	1,2-DICHLOROETHENE (TOTAL)	210	NA	NS	NS	43,000	22,100
RUC4MW006A	1,2-DICHLOROETHENE (TOTAL)	210	NA	NS	NS	--	760
IR28MW407	1,4-DICHLOROBENZENE	2.1	21	NS	NS	5.2	15
IR28MW211F	BENZENE	0.5	5	NS	NS	1.1	--
IR28MW407	BENZENE	0.5	5	NS	NS	0.84	1.6
RUC4MW005A	BENZENE	0.5	5	NS	NS	0.71	--
RUC4MW006A	BENZENE	0.5	5	NS	NS	1	2
RUC4MW007A	BENZENE	0.5	5	NS	NS	0.81	--
RUC4MW002A	CHLOROFORM	0.7	7	NS	NS	0.75	--
RUC4MW004A	CIS-1,2-DICHLOROETHENE	210	NA	NS	NS	210	--
RUC4MW005A	CIS-1,2-DICHLOROETHENE	210	NA	NS	NS	43,000	22,000
RUC4MW006A	CIS-1,2-DICHLOROETHENE	210	NA	NS	NS	--	750
IR28MW200A	TRICHLOROETHENE	2.9	29	11	NS	9.1	NS
IR28MW216F	TRICHLOROETHENE	2.9	29	NS	NS	4.2	--

Table 5
2022 Groundwater Analytical Results
Exceeding Project Action Limits and Active Treatment Criteria
Hunters Point Naval Shipyard, San Francisco, California

Well ID	Analyte	Project Action Limit (µg/L)	Active Treatment Criteria (µg/L)	March 2022 Result (µg/L)	June 2022 Result (µg/L)	September 2022 Result (µg/L)	December 2022 Result (µg/L)
IR28MW566A	TRICHLOROETHENE	2.9	29	7.7	NS	--	NS
RUC4MW002A	TRICHLOROETHENE	2.9	29	NS	NS	46	43
RUC4MW004A	TRICHLOROETHENE	2.9	29	NS	NS	14	16
RUC4MW005A	TRICHLOROETHENE	2.9	29	NS	NS	320	2,600
RUC4MW006A	TRICHLOROETHENE	2.9	29	NS	NS	--	100
IR28MW211F	VINYL CHLORIDE	0.5	25	NS	NS	1.9	--
IR28MW216F	VINYL CHLORIDE	0.5	25	NS	NS	0.53	--
IR28MW405	VINYL CHLORIDE	0.5	25	NS	NS	8.5	NS
IR28MW407	VINYL CHLORIDE	0.5	25	NS	NS	2.6	4.3
IR28MW566A	VINYL CHLORIDE	0.5	25	0.53	NS	1.2	NS
RUC4MW001A	VINYL CHLORIDE	0.5	25	NS	NS	4.7	2.5
RUC4MW003A	VINYL CHLORIDE	0.5	25	NS	NS	0.62	--
RUC4MW004A	VINYL CHLORIDE	0.5	25	NS	NS	35	--
RUC4MW005A	VINYL CHLORIDE	0.5	25	NS	NS	9,800	2,800
RUC4MW006A	VINYL CHLORIDE	0.5	25	NS	NS	17	120
RUC4MW007A	VINYL CHLORIDE	0.5	25	NS	NS	2.3	--
Parcel C (RU-C5)							
IR25MW65B	IRON	10,950	NA	NS	13,100	12,600	NS
IR06MW67A	1,1-DICHLOROETHANE	6.5	NA	33	NS	32	NS
IR25MW65B	1,2-DICHLOROETHANE	0.5	NA	NS	--	2.7	NS
IR06MW67A	1,2-DICHLOROETHENE (TOTAL)	210	NA	2,400	NS	2,300	NS
IR25MW11A	1,4-DICHLOROBENZENE	2.1	21	NS	6.4	6.7	NS
IR25MW64A	1,4-DICHLOROBENZENE	2.1	21	NS	7.9 J	16	NS
IR25MW65B	1,4-DICHLOROBENZENE	2.1	21	NS	6.5	9.3	NS
IR25MW68A	1,4-DICHLOROBENZENE	2.1	21	NS	3.8	3.5	NS
IR25MW69A	1,4-DICHLOROBENZENE	2.1	21	NS	40	53	NS
IR06MW59A1	BENZENE	0.5	5	--	NS	0.82	NS
IR06MW67A	BENZENE	0.5	5	2.1	NS	2.7	NS
IR25MW16A	BENZENE	0.5	5	--	NS	2.2	NS
IR25MW74A	BENZENE	0.5	5	15	NS	6.5	NS
IR25MW11A	BENZENE	0.5	5	NS	0.58	0.56	NS
IR25MW64A	BENZENE	0.5	5	NS	11 J	30	NS
IR25MW65B	BENZENE	1	5	NS	58	96	NS
IR25MW69A	BENZENE	0.5	5	NS	12.0	18	NS
IR06MW67A	CIS-1,2-DICHLOROETHENE	210	NA	2,400	NS	2,300	NS
IR25MW64A	CHLOROBENZENE	390	3,900	NS	420	1,500	NS
IR25MW65B	CHLOROBENZENE	70	3,900	NS	3,200	4,200	NS
IR25MW69A	CHLOROBENZENE	390	3,900	NS	650	1,000	NS
IR06MW42A	NAPHTHALENE	3.6	NA	23	NS	34	NS
IR25MW64A	NAPHTHALENE	3.6	NA	NS	--	4.2	NS
IR25MW65B	NAPHTHALENE	0.093	NA	NS	17	24	NS

Table 5
2022 Groundwater Analytical Results
Exceeding Project Action Limits and Active Treatment Criteria
Hunters Point Naval Shipyard, San Francisco, California

Well ID	Analyte	Project Action Limit (µg/L)	Active Treatment Criteria (µg/L)	March 2022 Result (µg/L)	June 2022 Result (µg/L)	September 2022 Result (µg/L)	December 2022 Result (µg/L)
IR06MW46A	TETRACHLOROETHENE	0.54	5.4	3.8	NS	4.5	NS
IR06MW59A1	TETRACHLOROETHENE	0.54	5.4	0.66	NS	0.87	NS
IR06MW67A	TETRACHLOROETHENE	0.54	5.4	16	NS	12	NS
IR25MW64A	TETRACHLOROETHENE	0.54	5.4	NS	4.9 J	2.7	NS
IR25MW69A	TETRACHLOROETHENE	0.54	5.4	NS	22	31	NS
IR25MW72A	TETRACHLOROETHENE	0.54	5.4	0.62	NS	0.61	NS
IR06MW59A1	TRICHLOROETHENE	2.9	29	3.3	NS	3.1	NS
IR06MW67A	TRICHLOROETHENE	2.9	29	180	NS	150	NS
IR25MW69A	TRICHLOROETHENE	2.9	29	NS	7.6	11	NS
IR06MW22A	VINYL CHLORIDE	0.5	25	1.2	NS	6	NS
IR06MW32A	VINYL CHLORIDE	0.5	25	3.2	NS	1.8	NS
IR06MW40A	VINYL CHLORIDE	0.5	25	0.82	NS	1.1	NS
IR06MW59A1	VINYL CHLORIDE	0.5	25	11	NS	16	NS
IR06MW67A	VINYL CHLORIDE	0.5	25	470	NS	980	NS
IR25MW16A	VINYL CHLORIDE	0.5	25	--	NS	1.3	NS
IR25MW74A	VINYL CHLORIDE	0.5	25	0.62	NS	0.56	NS
IR25MW64A	VINYL CHLORIDE	0.5	25	NS	4.3	3.9	NS
IR25MW69A	VINYL CHLORIDE	0.5	25	NS	20	41	NS
Parcel D-1							
No Exceedances in Parcel D-1							
Parcel E							
IR02MW373A	COPPER	28	NA	971	NS	NS	NS
IR02MW126A	LEAD	14.4	NA	17.9	NS	NS	NS
IR02MW373A	LEAD	14.4	NA	33.7	NS	NS	NS
IR02MW373A	NICKEL	96.5	NA	927	NS	NS	NS
IR02MW373A	ZINC	81	NA	5,000	NS	NS	NS
Parcel E-2							
IR01MW403B	1,2-DICHLOROETHANE	0.5	NA	--	NS	0.65	NS
IR01MWI-9R-D	ARSENIC	10	NA	--	NS	10.8	NS
IR01MW38A	CYANIDE	10	NA	--	NS	12.9	NS
IR01MW62A	CYANIDE	10	NA	30	NS	24.8	NS
IR01MWI-9R	CYANIDE	10	NA	--	NS	10.5	NS
IR01MW09B	LEAD	14.4	NA	18.7	NS	--	NS
IR01MW31A	LEAD	14.4	NA	25.9	NS	--	NS
IR01MW403B	LEAD	14.4	NA	28.1	NS	--	NS
IR01MW53BR	LEAD	14.4	NA	22.6	NS	--	NS
IR01MW64A	LEAD	14.4	NA	26.8	NS	--	NS
IR01MW66A	LEAD	14.4	NA	18.0	NS	--	NS
IR01MWLF2A	LEAD	14.4	NA	19.8	NS	--	NS
IR76MW13A	LEAD	14.4	NA	24.6	NS	--	NS

Table 5
2022 Groundwater Analytical Results
Exceeding Project Action Limits and Active Treatment Criteria
Hunters Point Naval Shipyard, San Francisco, California

Well ID	Analyte	Project Action Limit (µg/L)	Active Treatment Criteria (µg/L)	March 2022 Result (µg/L)	June 2022 Result (µg/L)	September 2022 Result (µg/L)	December 2022 Result (µg/L)
IR01MW48A	TPH-TOTAL	4,839	NA	--	NS	7,600 C	NS
IR01MW60A	TPH-TOTAL	4,839	NA	9,799 C	NS	12,545 C	NS
IR01MW64A	TPH-TOTAL	4,839	NA	6,692 C	NS	10,419 C	NS
IR01MW31A	UN-IONIZED AMMONIA ⁽¹⁾	25	NA	369	NS	--	NS
IR01MW38A	UN-IONIZED AMMONIA ⁽¹⁾	25	NA	151	NS	128	NS
IR01MW48A	UN-IONIZED AMMONIA ⁽¹⁾	25	NA	464	NS	376	NS
IR01MW60A	UN-IONIZED AMMONIA ⁽¹⁾	25	NA	39	NS	49	NS
IR01MWI-9R	UN-IONIZED AMMONIA ⁽¹⁾	25	NA	1,945	NS	894	NS
Parcel G							
IR33MW64A	CARBON TETRACHLORIDE	0.5	NA	2.1	NS	0.5	2.1
IR33MW64A	CHLOROFORM	1.0	NA	8.4	NS	--	8.4
Parcel UC-2							
IR06MW54FR	CARBON TETRACHLORIDE	0.5	NA	0.91	NS	0.76	0.91

Notes:

µg/L = micrograms per liter

C= Calculated

NA = Active Treatment Criteria values are only used for Parcel C remedial action and are not applicable for other Parcels at Hunters Point Naval Shipyard

NS = monitoring well not sampled

'--' = analytical result did not exceed PALs or ATCs

ATCs = active treatment criteria

PAL = project action limit

J= estimated

IR= Installation Restoration

Grey box = concentration exceeded both the Project Action Limit and the Active Treatment Criteria

(1) = Un-ionized ammonia is a calculated amount using the pH, temperature, and ammonia

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Appendix F

Radiological Review

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Comparison of Estimated Excess Cancer Risk Calculated with the USEPA Radionuclide PRG Calculator Using the Peak Risk Time Interval to those in the 2019 Five-Year Review.

Radionuclide of Concern	Soil Remediation Goals (pCi/g) ^a		Estimated Excess Cancer Risks	
	Outdoor Worker	Residential	Risk (2019 Five-Year Review) ^{b,d}	Risk Calculated Using the Peak Risk Time Interval ^{c,d,f}
Americium-241 (Am-241)	5.67	1.36	6.0E-07	6.0E-07
Cesium-137 (Cs-137)	0.113	0.113	2.0E-06	1.9E-06
Cobalt-60 (Co-60)	0.0602	0.0361	1.1E-06	1.1E-06
Europium-152 (Eu-152)	0.13	0.13	3.4E-06	3.4E-06
Europium-154 (Eu-154)	0.23	0.23	4.9E-06	4.9E-06
Plutonium-239 (Pu-239)	14	2.59	6.7E-07	6.7E-07
Radium-226 (Ra-226)	1	1.0	7.9E-05	7.8E-05
Strontium-90 (Sr-90)	10.8	0.331	7.9E-08	7.9E-08
Thallium-232 (Th-232)	2.7	1.69	1.7E-04	1.7E-04
Tritium (H-3)	4.23	2.28	9.6E-06	9.6E-06
Uranium-235 (U-235)	0.398	0.195	1.0E-06	1.1E-06
Cumulative Risk^e			2.7E-04	2.7E-04

^a Table 1 of the 2019 Five-Year Review (Navy, 2019)

^b Table 5 of the 2019 Five-Year Review (Navy, 2019)

^c Cancer risk calculated using the "Peak Risk" time interval using the USEPA Radionuclides PRG Calculator (2023).

^d Residential soil remediation goals are used as exposure point concentrations.

^e Cumulative cancer risk is calculated summing risks from all radionuclides of concern.

^f Consistent with the 2019 Five-Year Review, peak risk is calculated within the first 1,000 years peak time period.

pCi/g = picocurie(s) per gram

Sources:

Navy. 2019. *Fourth Five-Year Review, Hunters Point Naval Shipyard, San Francisco, California*. July.

United States Environmental Protection Agency (USEPA). 2020. Preliminary Remediation Goals for Radionuclides (PRG) Calculator. Updated July. https://epa-prgs.org/cgi-bin/radionuclides/rprg_search.

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Table F-1. Site-specific Resident Soil Inputs

Variable	Resident Soil Default Value	Form-input Value
A (PEF Dispersion Constant)	16.2302	13.8139
B (PEF Dispersion Constant)	18.7762	20.1624
City (Climate Zone)	Default	San Francisco, CA (2
C (PEF Dispersion Constant)	216.108	234.2869
Cover thickness for GSF _o (gamma shielding factor) cm	0 cm	0 cm
Cover thickness for GSF _b (gamma shielding factor) cm	0 cm	0 cm
CF _{res-produce} (contaminated plant fraction) unitless	1	1
ED _{res-a} (produce exposure duration - resident adult) yr	20	20
ED _{res-c} (produce exposure duration - resident child) yr	6	6
EF _{res-a} (produce exposure frequency - resident adult) day/yr	350	350
EF _{res-c} (produce exposure frequency - resident child) day/yr	350	350
TR (produce target cancer risk) unitless	0.000001	0.000001
F(x) (function dependent on U _m /U _t) unitless	0.194	0.0391
PEF (particulate emission factor) m ³ /kg	1359344438	4078965032
Q/C _{wind} (g/m ² -s per kg/m ³)	93.77	32.35983268
A _s (acres)	0.5	420
Site area for ACF (area correction factor) m ²	1000000 m ²	1000000 m ²
ED _{res} (soil exposure duration - resident) yr	26	26
ED _{res-a} (soil exposure duration - resident adult) yr	20	20
ED _{res-c} (soil exposure duration - resident child) yr	6	6
EF _{res} (soil exposure frequency - resident) day/yr	350	350
EF _{res-a} (soil exposure frequency - resident adult) day/yr	350	350
EF _{res-c} (soil exposure frequency - resident child) day/yr	350	350
ET _{res} (soil exposure time - resident) hr/day	24	24
ET _{res-a} (soil exposure time - resident adult) hr/day	24	24
ET _{res-c} (soil exposure time - resident child) hr/day	24	24
ET _{res-i} (soil exposure time - indoor resident) hr/day	16.416	16.416
ET _{res-o} (soil exposure time - outdoor resident) hr/day	1.752	1.752
GSF _i (gamma shielding factor - indoor) unitless	0.4	0.4
IFA _{res-adi} (age-adjusted soil inhalation factor - resident) m ³	161000	161000
IFS _{res-adj} (age-adjusted soil ingestion factor - resident) mg	1120000	1120000
IRA _{res-a} (soil inhalation rate - resident adult) m ³ /day	20	20
IRA _{res-c} (soil inhalation rate - resident child) m ³ /day	10	10
IRS _{res-a} (soil intake rate - resident adult) mg/day	100	100
IRS _{res-c} (soil intake rate - resident child) mg/day	200	200
t _{res} (time - resident) yr	26	26
TR (target cancer risk) unitless	0.000001	0.000001
Soil type	Default	Default
U _m (mean annual wind speed) m/s	4.69	3.89
U _t (equivalent threshold value)	11.32	11.32
V (fraction of vegetative cover) unitless	0.5	0.5

Table F-2. Soil PRG Am-241
Resident Parent Risk and CDI at Time= T_0 Soil (no decay)

Isotope	ICRP Lung Absorption Type	Inhalation Slope Factor (risk/pCi)	External Exposure Slope Factor (risk/yr per pCi/g)	Food Ingestion Slope Factor (risk/pCi)	Soil Ingestion Slope Factor (risk/pCi)	Lambda (1/yr)	Half-life (yr)
Am-241	F	3.77E-08	2.77E-08	1.34E-10	1.84E-10	1.60E-03	4.32E+02
1000000 m ² Soil Volume Area Correction Factor	0 cm Soil Volume Gamma Shielding Factor	Infinite Soil Volume Concentration (pCi/g)	Ingestion CDI (pCi)	Inhalation CDI (pCi)	External Exposure CDI (pCi-year/g)	Produce Consumption CDI (pCi)	
1.00E+00	1.00E+00	1.36E+00	1.52E+03	5.37E-02	1.18E+01	-	
Ingestion Risk	Inhalation Risk	External Exposure Risk	Produce Consumption Risk	Total Risk			
2.81E-07	2.03E-09	3.25E-07	-	6.08E-07			

Table F-3. Soil Peak Times Am-241
Resident Peak Risk Start Times (by route)

Peak Risk Start Time Ingestion (yrs)	Peak Risk Start Time Inhalation (yrs)	Peak Risk Start Time External Exposure (yrs)
1.00E-08	1.00E-08	1.00E-08

Table F-4. Soil Peak Risk Am-241
Resident Peak Risks
Soil (complete chain decay)
using the peak risk time intervals from PRG calculations (by route)

Isotope	Ingestion Concentration (pCi/g)	Inhalation Concentration (pCi/g)	External Exposure Concentration (pCi/g)	Produce Ingestion Concentration (pCi/g)	Ingestion Risk	Inhalation Risk	External Exposure Risk	Produce Consumption Risk	Total Risk
Am-241	1.36E+00	1.36E+00	1.36E+00	-	2.75E-07	1.98E-09	3.19E-07	-	5.95E-07
Np-237	0.00E+00	0.00E+00	0.00E+00	-	7.87E-13	6.38E-15	2.52E-12	-	3.31E-12
Pa-233	0.00E+00	0.00E+00	0.00E+00	-	1.03E-13	3.37E-18	3.88E-11	-	3.89E-11
U-233	0.00E+00	0.00E+00	0.00E+00	-	3.55E-17	2.35E-19	1.30E-18	-	3.70E-17
Th-229	0.00E+00	0.00E+00	0.00E+00	-	5.56E-20	8.90E-22	2.50E-19	-	3.07E-19
Ra-225	0.00E+00	0.00E+00	0.00E+00	-	3.47E-20	1.32E-22	6.75E-21	-	4.16E-20
Ac-225	0.00E+00	0.00E+00	0.00E+00	-	6.95E-20	1.43E-22	4.53E-20	-	1.15E-19
Fr-221	0.00E+00	0.00E+00	0.00E+00	-	0.00E+00	0.00E+00	1.15E-19	-	1.15E-19
At-217	0.00E+00	0.00E+00	0.00E+00	-	0.00E+00	0.00E+00	1.03E-21	-	1.03E-21
Bi-213	0.00E+00	0.00E+00	0.00E+00	-	1.70E-22	3.71E-25	5.96E-19	-	5.96E-19
Po-213	0.00E+00	0.00E+00	0.00E+00	-	0.00E+00	0.00E+00	1.86E-22	-	1.86E-22
Tl-209	0.00E+00	0.00E+00	0.00E+00	-	0.00E+00	0.00E+00	2.37E-19	-	2.37E-19
Pb-209	0.00E+00	0.00E+00	0.00E+00	-	8.90E-23	1.04E-27	5.31E-22	-	6.20E-22
Total Risk	-	-	-	-	2.75E-07	1.98E-09	3.19E-07	-	5.95E-07

Resident Parent Risk and CDI at Time= T_0 Soil (no decay)6-7

Table F-6. Soil Peak Times Co-60
Resident Peak Risk Start Times (by route)

Soil		
Peak Risk Start Time Ingestion (yrs)	Peak Risk Start Time Inhalation (yrs)	Peak Risk Start Time External Exposure (yrs)
1.00E-08	1.00E-08	1.00E-08

Table F-7. Soil Peak Risk Co-60
Resident Peak Risks
Soil (complete chain decay)
using the peak risk time intervals from PRG calculations (by route)

Isotope	Ingestion Concentration (pCi/g)	Inhalation Concentration (pCi/g)	External Exposure Concentration (pCi/g)	Produce Ingestion Concentration (pCi/g)	Ingestion Risk	Inhalation Risk	External Exposure Risk	Produce Consumption Risk	Total Risk
Co-60	3.61E-02	3.61E-02	3.61E-02	-	4.36E-10	4.06E-14	1.09E-06	-	1.09E-06
Total Risk	-	-	-	-	4.36E-10	4.06E-14	1.09E-06	-	1.09E-06

Table F-8. Soil PRG Cs-137

Resident Parent Risk and CDI at Time= T_0 Soil (no decay)

Isotope	ICRP Lung Absorption Type	Inhalation Slope Factor (risk/pCi)	External Exposure Slope Factor (risk/yr per pCi/g)	Food Ingestion Slope Factor (risk/pCi)	Soil Ingestion Slope Factor (risk/pCi)	Lambda (1/yr)	Half-life (yr)
Cs-137	S	1.12E-10	5.52E-10	3.74E-11	4.26E-11	2.30E-02	3.02E+01

1000000 m ² Soil Volume Area Correction Factor	0 cm Soil Volume Gamma Shielding Factor	Infinite Soil Volume Concentration (pCi/g)	Ingestion CDI (pCi)	Inhalation CDI (pCi)	External Exposure CDI (pCi-year/g)	Produce Consumption CDI (pCi)
1.00E+00	1.00E+00	1.13E-01	1.27E+02	4.46E-03	9.76E-01	-

Ingestion Risk	Inhalation Risk	External Exposure Risk	Produce Consumption Risk	Total Risk
5.39E-09	5.02E-13	5.39E-10	-	5.92E-09

**Table F-9. Soil Peak Times Cs-137
Resident Peak Risk Start Times (by route)**

Soil			
Peak Risk Start Time Ingestion (yrs)	Peak Risk Start Time Inhalation (yrs)	Peak Risk Start Time External Exposure (yrs)	
1.00E-08	1.00E-08	1.00E-08	

Table F-10. Soil peak Risk Cs-137
Resident Peak Risks
Soil (complete chain decay)
using the peak risk time intervals from PRG calculations (by route)

Isotope	Ingestion Concentration (pCi/g)	Inhalation Concentration (pCi/g)	External Exposure Concentration (pCi/g)	Produce Ingestion Concentration (pCi/g)	Ingestion Risk	Inhalation Risk	External Exposure Risk	Produce Consumption Risk	Total Risk
Cs-137	1.13E-01	1.13E-01	1.13E-01	-	4.05E-09	3.78E-13	4.06E-10	-	4.46E-09
Ba-137m	0.00E+00	0.00E+00	0.00E+00	-	0.00E+00	0.00E+00	1.86E-06	-	1.86E-06
Total Risk	-	-	-	-	4.05E-09	3.78E-13	1.86E-06	-	1.87E-06

Table F-11. Soil PRG Eu-152
Resident Parent Risk and CDI at Time=T₀ Soil (no decay)

Isotope	ICRP Lung Absorption Type	Inhalation Slope Factor (risk/pCi)	External Exposure Slope Factor (risk/yr per pCi/g)	Food Ingestion Slope Factor (risk/pCi)	Soil Ingestion Slope Factor (risk/pCi)	Lambda (1/yr)	Half-life (yr)
Eu-152	F	1.91E-10	5.41E-06	8.33E-12	1.46E-11	5.12E-02	1.35E+01

1000000 m ² Soil Volume Area Correction Factor	0 cm Soil Volume Gamma Shielding Factor	Infinite Soil Volume Concentration (pCi/g)	Ingestion CDI (pCi)	Inhalation CDI (pCi)	External Exposure CDI (pCi-year/g)	Produce Consumption CDI (pCi)
1.00E+00	1.00E+00	1.30E-01	1.46E+02	5.13E-03	1.12E+00	-

Ingestion Risk	Inhalation Risk	External Exposure Risk	Produce Consumption Risk	Total Risk
2.12E-09	9.82E-13	6.07E-06	-	6.08E-06

Table F-12. Soil Peak Times Eu-152
Resident Peak Risk Start Times (by route)
Soil

Peak Risk Start Time Ingestion (yrs)	Peak Risk Start Time Inhalation (yrs)	Peak Risk Start Time External Exposure (yrs)
1.00E-08	1.00E-08	1.00E-08

Table F-13. Soil Peak Risk Eu-152
Resident Peak Risks
Soil (complete chain decay)
using the peak risk time intervals from PRG calculations (by route)

Isotope	Ingestion Concentration (pCi/g)	Inhalation Concentration (pCi/g)	External Exposure Concentration (pCi/g)	Produce Ingestion Concentration (pCi/g)	Ingestion Risk	Inhalation Risk	External Exposure Risk	Produce Consumption Risk	Total Risk
Eu-152	1.30E-01	1.30E-01	1.30E-01	-	1.17E-09	5.43E-13	3.36E-06	-	3.36E-06
Gd-152	0.00E+00	0.00E+00	0.00E+00	-	1.25E-22	7.30E-25	0.00E+00	-	1.25E-22
Sm-148	0.00E+00	0.00E+00	0.00E+00	-	1.20E-37	8.21E-40	0.00E+00	-	1.21E-37
Nd-144	0.00E+00	0.00E+00	0.00E+00	-	0.00E+00	0.00E+00	0.00E+00	-	0.00E+00
Total Risk	-	-	-	-	1.17E-09	5.43E-13	3.36E-06	-	3.36E-06

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CH2M-0007-4930-0008

Table F-15. Soil Peak Times Eu-154
Resident Peak Risk Start Times (by route)

Soil		
Peak Risk Start Time Ingestion (yrs)	Peak Risk Start Time Inhalation (yrs)	Peak Risk Start Time External Exposure (yrs)
1.00E-08	1.00E-08	1.00E-08

Table F-16. Soil Peak Risk Eu-154
Resident Peak Risks
Soil (complete chain decay)
using the peak risk time intervals from PRG calculations (by route)

Isotope	Ingestion Concentration (pCi/g)	Inhalation Concentration (pCi/g)	External Exposure Concentration (pCi/g)	Produce Ingestion Concentration (pCi/g)	Ingestion Risk	Inhalation Risk	External Exposure Risk	Produce Consumption Risk	Total Risk
Eu-154	2.30E-01	2.30E-01	2.30E-01	-	2.74E-09	7.83E-13	4.86E-06	-	4.87E-06
Total Risk	-	-	-	-	2.74E-09	7.83E-13	4.86E-06	-	4.87E-06

Table F-17. Soil PRG H-3
Resident Parent Risk and CDI at Time=T₀ Soil (no decay)

Isotope	ICRP Lung Absorption Type	Inhalation Slope Factor (risk/pCi)	External Exposure Slope Factor (risk/yr per pCi/g)	Food Ingestion Slope Factor (risk/pCi)	Soil Ingestion Slope Factor (risk/pCi)	Lambda (1/yr)	Half-life (yr)
H-3	S	8.47E-13	0.00E+00	1.44E-13	8.99E-14	5.63E-02	1.23E+01

1000000 m ² Soil Volume Area Correction Factor	0 cm Soil Volume Gamma Shielding Factor	Infinite Soil Volume Concentration (pCi/g)	Ingestion CDI (pCi)	Inhalation CDI (pCi)	External Exposure CDI (pCi-year/g)	Produce Consumption CDI (pCi)
9.00E-01	1.00E+00	2.28E+00	2.55E+03	2.16E+07	1.77E+01	-

Ingestion Risk	Inhalation Risk	External Exposure Risk	Produce Consumption Risk	Total Risk
2.30E-10	1.83E-05	0.00E+00	-	1.83E-05

Table F-18. Soil Peak times H-3

Resident Peak Risk Start Times (by route)

Soil	
Peak Risk Start Time Ingestion (yrs)	Peak Risk Start Time Inhalation (yrs)
1.00E-08	1.00E-08

Table F-19. Soil Peak Risk H-3
Resident Peak Risks
Soil (complete chain decay)
using the peak risk time intervals from PRG calculations (by route)

Isotope	Ingestion Concentration (pCi/g)	Inhalation Concentration (pCi/g)	External Exposure Concentration (pCi/g)	Produce Ingestion Concentration (pCi/g)	Ingestion Risk	Inhalation Risk	External Exposure Risk	Produce Consumption Risk	Total Risk
H-3	2.28E+00	2.28E+00	-	-	1.21E-10	9.61E-06	-	-	9.61E-06
Total Risk	-	-	-	-	1.21E-10	9.61E-06	-	-	9.61E-06

Table F-20. Soil PRG Pu239

Resident Parent Risk and CDI at Time= T_0 Soil (no decay)

Isotope	ICRP Lung Absorption Type	Inhalation Slope Factor (risk/pCi)	External Exposure Slope Factor (risk/yr per pCi/g)	Food Ingestion Slope Factor (risk/pCi)	Soil Ingestion Slope Factor (risk/pCi)	Lambda (1/yr)	Half-life (yr)
Pu-239	F	5.55E-08	2.09E-10	1.74E-10	2.28E-10	2.87E-05	2.41E+04
1000000 m ² Soil Volume Area Correction Factor	1.00E+00	0 cm Soil Volume Gamma Shielding Factor	Infinite Soil Volume Concentration (pCi/g)	Ingestion CDI (pCi)	Inhalation CDI (pCi)	External Exposure CDI (pCi-year/g)	Produce Consumption CDI (pCi)
		1.00E+00	2.59E+00	2.90E+03	1.02E-01	2.24E+01	-
Ingestion Risk	6.61E-07	Inhalation Risk	External Exposure Risk	Produce Consumption Risk	Total Risk		
		5.67E-09	4.68E-09	-	6.72E-07		

Table F-21. Soil Peak Times Pu-239
Resident Peak Risk Start Times (by route)

Soil			
Peak Risk Start Time Ingestion (yrs)	Peak Risk Start Time Inhalation (yrs)	Peak Risk Start Time External Exposure (yrs)	
1.00E-08	1.00E-08	1.00E-08	

Table F-22. Soil Peak Risk Pu-239**Resident Peak Risks****Soil (complete chain decay)****using the peak risk time intervals from PRG calculations (by route)**

Isotope	Ingestion Concentration (pCi/g)	Inhalation Concentration (pCi/g)	External Exposure Concentration (pCi/g)	Produce Ingestion Concentration (pCi/g)	Ingestion Risk	Inhalation Risk	External Exposure Risk	Produce Consumption Risk	Total Risk
Pu-239	2.59E+00	2.59E+00	2.59E+00	-	6.61E-07	5.67E-09	4.68E-09	-	6.71E-07
U-235m	0.00E+00	0.00E+00	0.00E+00	-	4.78E-14	1.91E-19	0.00E+00	-	4.78E-14
U-235	0.00E+00	0.00E+00	0.00E+00	-	5.48E-15	3.27E-17	1.58E-13	-	1.63E-13
Th-231	0.00E+00	0.00E+00	0.00E+00	-	2.21E-16	1.96E-21	7.12E-15	-	7.34E-15
Pa-231	0.00E+00	0.00E+00	0.00E+00	-	2.03E-18	1.83E-20	6.68E-18	-	8.72E-18
Ac-227	0.00E+00	0.00E+00	0.00E+00	-	3.49E-19	6.34E-21	1.84E-21	-	3.57E-19
Th-227	0.00E+00	0.00E+00	0.00E+00	-	1.51E-19	1.45E-21	4.03E-18	-	4.18E-18
Fr-223	0.00E+00	0.00E+00	0.00E+00	-	2.81E-22	2.38E-26	1.73E-20	-	1.76E-20
Ra-223	0.00E+00	0.00E+00	0.00E+00	-	7.08E-19	1.22E-21	4.15E-18	-	4.86E-18
At-219	0.00E+00	0.00E+00	0.00E+00	-	0.00E+00	0.00E+00	0.00E+00	-	0.00E+00
Rn-219	0.00E+00	0.00E+00	0.00E+00	-	0.00E+00	0.00E+00	2.14E-18	-	2.14E-18
Bi-215	0.00E+00	0.00E+00	0.00E+00	-	0.00E+00	0.00E+00	8.08E-24	-	8.08E-24
Po-215	0.00E+00	0.00E+00	0.00E+00	-	0.00E+00	0.00E+00	6.83E-21	-	6.83E-21
Pb-211	0.00E+00	0.00E+00	0.00E+00	-	1.13E-21	1.68E-24	2.65E-18	-	2.65E-18
Bi-211	0.00E+00	0.00E+00	0.00E+00	-	0.00E+00	0.00E+00	1.74E-18	-	1.74E-18
Po-211	0.00E+00	0.00E+00	0.00E+00	-	0.00E+00	0.00E+00	9.46E-22	-	9.46E-22
Tl-207	0.00E+00	0.00E+00	0.00E+00	-	0.00E+00	0.00E+00	1.44E-19	-	1.44E-19
Total Risk	-	-	-	-	6.61E-07	5.67E-09	4.68E-09	-	6.71E-07

Table F-23. Soil PRG Ra-226
Resident Parent Risk and CDI at Time= T_0 Soil (no decay)

Isotope	ICRP Lung Absorption Type	Inhalation Slope Factor (risk/pCi)	External Exposure Slope Factor (risk/yr per pCi/g)	Food Ingestion Slope Factor (risk/pCi)	Soil Ingestion Slope Factor (risk/pCi)	Lambda (1/yr)	Half-life (yr)
Ra-226	S	2.82E-08	2.50E-08	5.14E-10	6.77E-10	4.33E-04	1.60E+03

1000000 m ² Soil Volume Area Correction Factor	0 cm Soil Volume Gamma Shielding Factor	Infinite Soil Volume Concentration (pCi/g)	Ingestion CDI (pCi)	Inhalation CDI (pCi)	External Exposure CDI (pCi-year/g)	Produce Consumption CDI (pCi)
1.00E+00	1.00E+00	1.00E+00	1.12E+03	3.95E-02	8.64E+00	-

Ingestion Risk	Inhalation Risk	External Exposure Risk	Produce Consumption Risk	Total Risk
7.58E-07	1.11E-09	2.16E-07	-	9.75E-07

Table F-24. Soil Peak Times Ra-226
Resident Peak Risk Start Times (by route)

Soil		
Peak Risk Start Time Ingestion (yrs)	Peak Risk Start Time Inhalation (yrs)	Peak Risk Start Time External Exposure (yrs)
1.23E+02	1.06E+02	6.82E-02

Table F-25. Soil Peak Risk Ra-226**Resident Peak Risks****Soil (complete chain decay)
using the peak risk time intervals from PRG calculations (by route)**

Isotope	Ingestion Concentration (pCi/g)	Inhalation Concentration (pCi/g)	External Exposure Concentration (pCi/g)	Produce Ingestion Concentration (pCi/g)	Ingestion Risk	Inhalation Risk	External Exposure Risk	Produce Consumption Risk	Total Risk
Ra-226	9.48E-01	9.55E-01	1.00E+00	-	7.15E-07	1.06E-09	2.15E-07	-	9.31E-07
Rn-222	9.48E-01	9.55E-01	9.89E-01	-	0.00E+00	8.55E-14	1.45E-08	-	1.45E-08
Po-218	9.48E-01	9.55E-01	9.89E-01	-	0.00E+00	5.21E-13	5.29E-14	-	5.74E-13
At-218	1.90E-04	1.91E-04	1.98E-04	-	0.00E+00	0.00E+00	4.24E-14	-	4.24E-14
Rn-218	1.90E-07	1.91E-07	1.98E-07	-	0.00E+00	0.00E+00	5.82E-15	-	5.82E-15
Pb-214	9.48E-01	9.55E-01	9.89E-01	-	8.36E-10	2.91E-12	8.54E-06	-	8.54E-06
Bi-214	9.48E-01	9.55E-01	9.89E-01	-	4.26E-10	2.32E-12	6.31E-05	-	6.31E-05
Po-214	9.48E-01	9.55E-01	9.89E-01	-	0.00E+00	0.00E+00	3.31E-09	-	3.31E-09
Tl-210	1.99E-04	2.01E-04	2.08E-04	-	0.00E+00	0.00E+00	2.42E-08	-	2.42E-08
Pb-210	9.40E-01	9.32E-01	1.66E-03	-	1.81E-06	5.87E-10	4.04E-09	-	1.81E-06
Bi-210	9.40E-01	9.32E-01	1.10E-03	-	2.53E-08	1.68E-11	7.52E-09	-	3.28E-08
Po-210	9.40E-01	9.31E-01	4.50E-05	-	3.45E-06	5.37E-10	1.18E-10	-	3.45E-06
Hg-206	1.79E-08	1.77E-08	3.14E-11	-	0.00E+00	0.00E+00	2.50E-14	-	2.50E-14
Tl-206	1.26E-06	1.25E-06	1.48E-09	-	0.00E+00	0.00E+00	2.22E-14	-	2.22E-14
Total Risk	-	-	-	-	6.00E-06	2.20E-09	7.19E-05	-	7.79E-05

Table F-26. Soil PRG Sr-90
Resident Parent Risk and CDI at Time=T₀ Soil (no decay)

Isotope	ICRP Lung Absorption Type	Inhalation Slope Factor (risk/pCi)	External Exposure Slope Factor (risk/yr per pCi/g)	Food Ingestion Slope Factor (risk/pCi)	Soil Ingestion Slope Factor (risk/pCi)	Lambda (1/yr)	Half-life (yr)
Sr-90	S	4.26E-10	4.83E-10	6.88E-11	8.62E-11	2.41E-02	2.88E+01

1000000 m ² Soil Volume Area Correction Factor	0 cm Soil Volume Gamma Shielding Factor	Infinite Soil Volume Concentration (pCi/g)	Ingestion CDI (pCi)	Inhalation CDI (pCi)	External Exposure CDI (pCi-year/g)	Produce Consumption CDI (pCi)
9.00E-01	1.00E+00	3.31E-01	3.71E+02	1.31E-02	2.57E+00	-

Ingestion Risk	Inhalation Risk	External Exposure Risk	Produce Consumption Risk	Total Risk
3.20E-08	5.56E-12	1.24E-09	-	3.32E-08

Table F-27. Soil Peak Times Sr-90
Resident Peak Risk Start Times (by route)

Soil			
Peak Risk Start Time Ingestion (yrs)	Peak Risk Start Time Inhalation (yrs)	Peak Risk Start Time External Exposure (yrs)	
1.00E-08	1.00E-08	1.00E-08	

Table F-28. Soil Peak Risk Sr-90

Resident Peak Risks

Soil (complete chain decay)

using the peak risk time intervals from PRG calculations (by route)

Isotope	Ingestion Concentration (pCi/g)	Inhalation Concentration (pCi/g)	External Exposure Concentration (pCi/g)	Produce Ingestion Concentration (pCi/g)	Ingestion Risk	Inhalation Risk	External Exposure Risk	Produce Consumption Risk	Total Risk
Sr-90	3.31E-01	3.31E-01	3.31E-01	-	2.38E-08	4.13E-12	9.25E-10	-	2.47E-08
Y-90	0.00E+00	0.00E+00	0.00E+00	-	1.36E-08	8.15E-14	4.05E-08	-	5.40E-08
Total Risk	-	-	-	-	3.73E-08	4.21E-12	4.14E-08	-	7.87E-08

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Table F-30. Soil Peak Times Th-232
Resident Peak Risk Start Times (by route)

Soil			
Peak Risk Start Time Ingestion (yrs)	Peak Risk Start Time Inhalation (yrs)	Peak Risk Start Time External Exposure (yrs)	
1.69E+02	1.69E+02	1.70E+02	

Table F-31. Soil Peak Risk Th-232**Resident Peak Risks****Soil (complete chain decay)**

using the peak risk time intervals from PRG calculations (by route)

Isotope	Ingestion Concentration (pCi/g)	Inhalation Concentration (pCi/g)	External Exposure Concentration (pCi/g)	Produce Ingestion Concentration (pCi/g)	Ingestion Risk	Inhalation Risk	External Exposure Risk	Produce Consumption Risk	Total Risk
Th-232	1.69E+00	1.69E+00	1.69E+00	-	3.48E-07	2.89E-09	5.23E-09	-	3.56E-07
Ra-228	1.69E+00	1.69E+00	1.69E+00	-	3.75E-06	2.91E-09	5.01E-10	-	3.75E-06
Ac-228	1.69E+00	1.69E+00	1.69E+00	-	9.31E-09	3.28E-12	5.90E-05	-	5.90E-05
Th-228	1.69E+00	1.69E+00	1.69E+00	-	4.60E-07	8.84E-09	8.24E-08	-	5.51E-07
Ra-224	1.69E+00	1.69E+00	1.69E+00	-	8.05E-07	7.55E-10	5.71E-07	-	1.38E-06
Rn-220	1.69E+00	1.69E+00	1.69E+00	-	0.00E+00	7.67E-14	4.04E-08	-	4.04E-08
Po-216	1.69E+00	1.69E+00	1.69E+00	-	0.00E+00	0.00E+00	1.04E-09	-	1.04E-09
Pb-212	1.69E+00	1.69E+00	1.69E+00	-	1.20E-07	4.20E-11	7.25E-06	-	7.37E-06
Bi-212	1.69E+00	1.69E+00	1.69E+00	-	3.18E-09	7.54E-12	7.25E-06	-	7.25E-06
Po-212	1.08E+00	1.08E+00	1.08E+00	-	0.00E+00	0.00E+00	0.00E+00	-	0.00E+00
Tl-208	6.07E-01	6.07E-01	6.07E-01	-	0.00E+00	0.00E+00	9.19E-05	-	9.19E-05
Total Risk	-	-	-	-	5.49E-06	1.54E-08	1.66E-04	-	1.72E-04

Table F-32. Soil PRG U-235

Resident Parent Risk and CDI at Time= T_0 Soil (no decay)

Isotope	ICRP Lung Absorption Type	Inhalation Slope Factor (risk/pCi)	External Exposure Slope Factor (risk/yr per pCi/g)	Food Ingestion Slope Factor (risk/pCi)	Soil Ingestion Slope Factor (risk/pCi)	Lambda (1/yr)	Half-life (yr)
U-235	S	2.50E-08	5.51E-07	9.44E-11	1.48E-10	9.84E-10	7.04E+08
1000000 m ² Soil Volume Area Correction Factor	0 cm Soil Volume Gamma Shielding Factor	Infinite Soil Volume Concentration (pCi/g)	Ingestion CDI (pCi)	Inhalation CDI (pCi)	External Exposure CDI (pCi-year/g)	Produce Consumption CDI (pCi)	
1.00E+00	1.00E+00	1.95E-01	2.18E+02	7.70E-03	1.69E+00	-	
Ingestion Risk	Inhalation Risk	External Exposure Risk	Produce Consumption Risk	Total Risk			
3.22E-08	1.93E-10	9.29E-07	-	9.61E-07			

Table F-33. Soil Peak Times U-235
Resident Peak Risk Start Times (by route)

Soil			
Peak Risk Start Time Ingestion (yrs)	Peak Risk Start Time Inhalation (yrs)	Peak Risk Start Time External Exposure (yrs)	
9.74E+02	9.74E+02	9.74E+02	

Table F-34. Soil Peak Risk U-235
Resident Peak Risks
Soil (complete chain decay)
using the peak risk time intervals from PRG calculations (by route)

Isotope	Ingestion Concentration (pCi/g)	Inhalation Concentration (pCi/g)	External Exposure Concentration (pCi/g)	Produce Ingestion Concentration (pCi/g)	Ingestion Risk	Inhalation Risk	External Exposure Risk	Produce Consumption Risk	Total Risk
U-235	1.95E-01	1.95E-01	1.95E-01	-	3.22E-08	1.93E-10	9.29E-07	-	9.61E-07
Th-231	1.95E-01	1.95E-01	1.95E-01	-	1.30E-09	1.16E-14	4.19E-08	-	4.32E-08
Pa-231	3.98E-03	3.98E-03	3.98E-03	-	1.34E-09	1.21E-11	4.43E-09	-	5.79E-09
Ac-227	3.85E-03	3.85E-03	3.85E-03	-	1.27E-09	2.30E-11	6.69E-12	-	1.30E-09
Th-227	3.80E-03	3.80E-03	3.80E-03	-	5.55E-10	5.32E-12	1.48E-08	-	1.54E-08
Fr-223	5.31E-05	5.31E-05	5.31E-05	-	1.02E-12	8.65E-17	6.30E-11	-	6.40E-11
Ra-223	3.85E-03	3.85E-03	3.85E-03	-	2.62E-09	4.50E-12	1.54E-08	-	1.80E-08
At-219	3.19E-09	3.19E-09	3.19E-09	-	0.00E+00	0.00E+00	0.00E+00	-	0.00E+00
Rn-219	3.85E-03	3.85E-03	3.85E-03	-	0.00E+00	0.00E+00	7.91E-09	-	7.91E-09
Bi-215	3.09E-09	3.09E-09	3.09E-09	-	0.00E+00	0.00E+00	2.93E-14	-	2.93E-14
Po-215	3.85E-03	3.85E-03	3.85E-03	-	0.00E+00	0.00E+00	2.52E-11	-	2.52E-11
Pb-211	3.85E-03	3.85E-03	3.85E-03	-	4.17E-12	6.21E-15	9.80E-09	-	9.81E-09
Bi-211	3.85E-03	3.85E-03	3.85E-03	-	0.00E+00	0.00E+00	6.42E-09	-	6.42E-09
Po-211	1.06E-05	1.06E-05	1.06E-05	-	0.00E+00	0.00E+00	3.50E-12	-	3.50E-12
Tl-207	3.84E-03	3.84E-03	3.84E-03	-	0.00E+00	0.00E+00	5.34E-10	-	5.34E-10
Total Risk	-	-	-	-	3.93E-08	2.37E-10	1.03E-06	-	1.07E-06

Appendix G

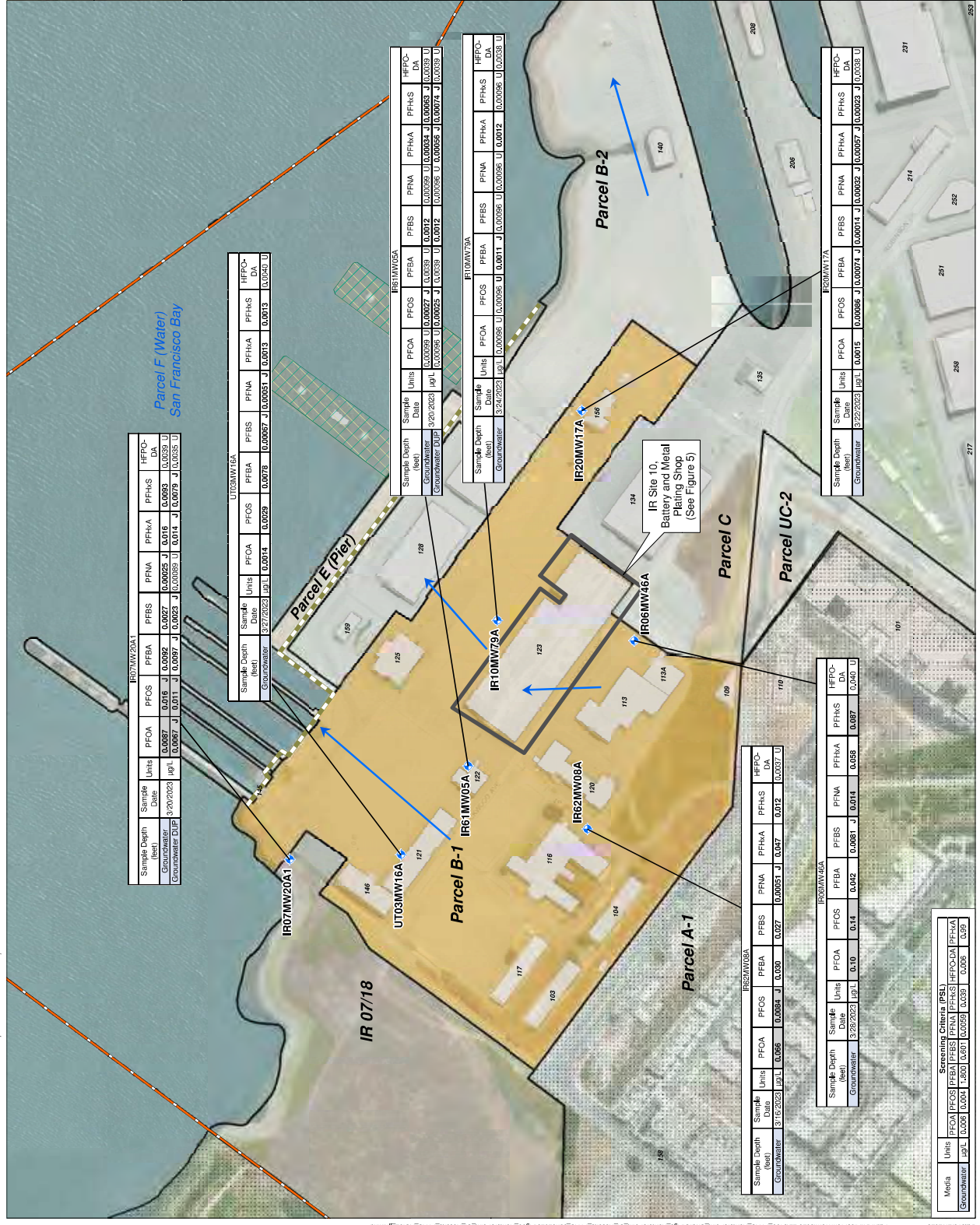
A-Aquifer Groundwater Figures from Site Inspection for Basewide Investigation of PFAS (DCN: LBJV-5006-4496-0034)

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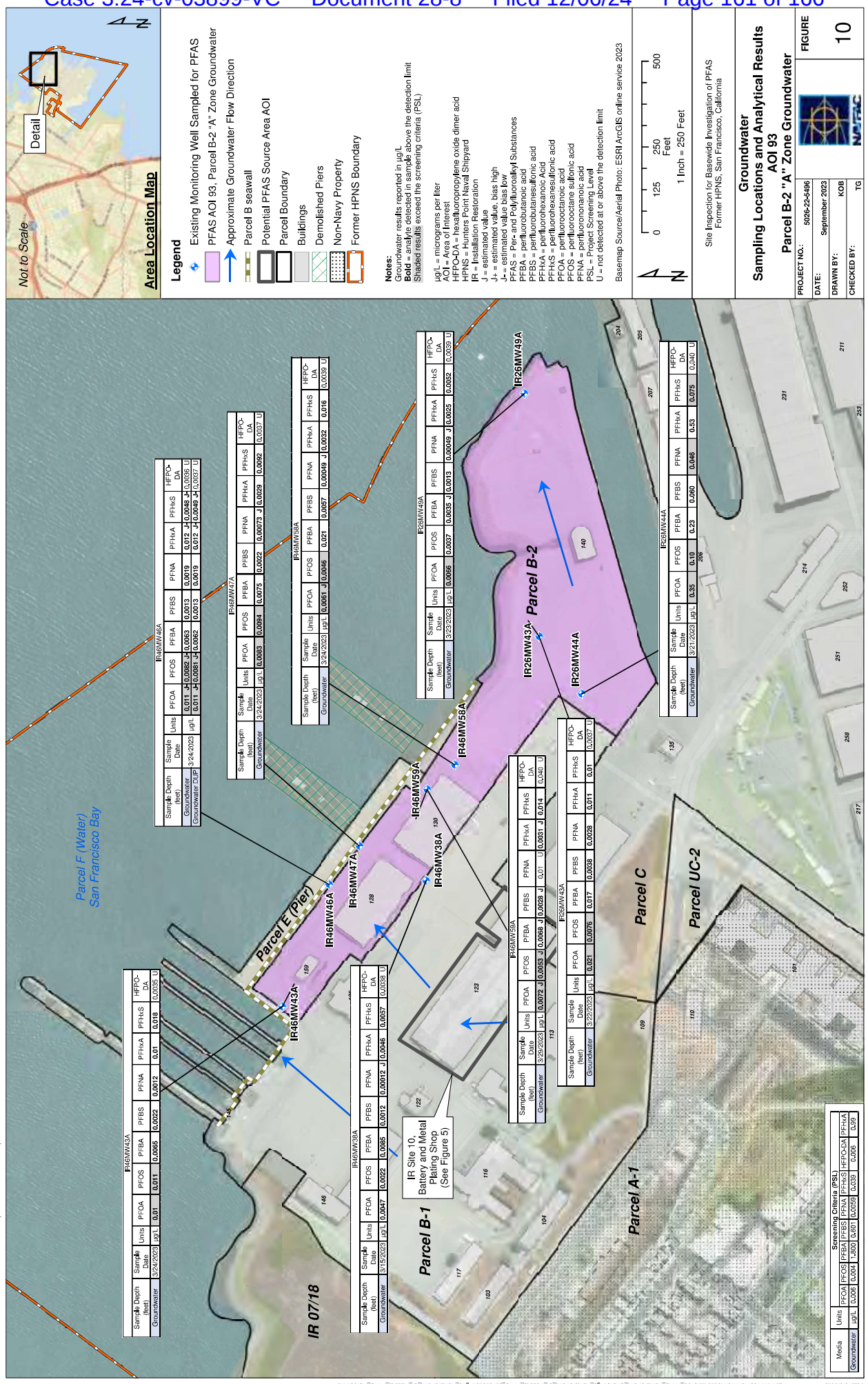
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FIFTH FIVE-YEAR REVIEW REPORT
HUNTERS POINT NAVAL SHIPYARD, SAN FRANCISCO, CALIFORNIA

APPENDIX G



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